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How the best marketing involves catching a cold

RISC OS and Windows
We continue the detailed comparison

USB
Mike Cook takes a critical look

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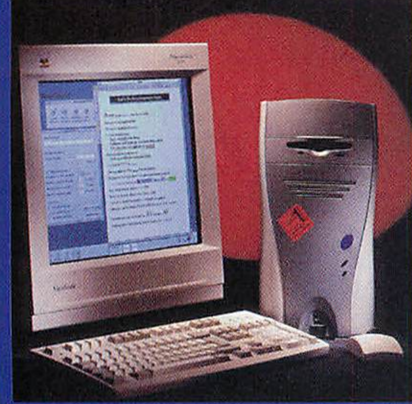




ISSUE 254 CHRISTMAS 2002 £4.20

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• Computers & Music Hardware • Upgrades • Software • Cables etc •







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Get free carriage if you also take a monitor (the 'b' indicates an additional £10 carriage charge). Keyboard, mouse and mains cable included. Single slice machines do not have backplanes unless specified; two slice machines have four slot backplanes. Ethernet cards etc. can be taken out if not required. There is a three month warranty on these machines and they are supplied 'as seen', so to speak. All details are subject to change and please check availability before ordering. A7000(+) machines are also available – please ask for details.

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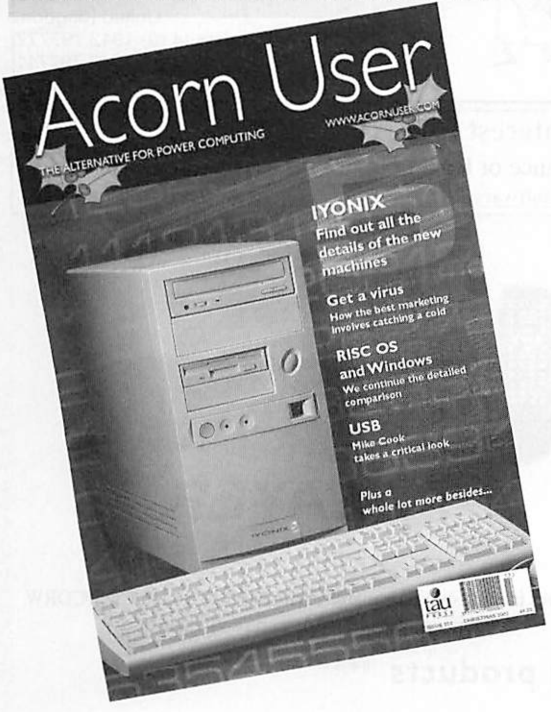








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Editor's Comment

The saying goes that "if you build a better mousetrap the world will beat a path to your door". I don't know who is supposed to have said it but there are three options here: (a) this person was not a businessman; (b) the person actually said more than this; (c) or, it's a misquote.

No professional business person believes that for a second, the falsity of it is so obvious. Unless you tell people, no one is going to know. Maybe, just maybe, the product is so good that, once a few people know, they will spread the word very fast for you but that is very rare.

It is very easy to tell people about what you are doing. You issue press releases to the Press, you publish public announcements on the 'Net. Very simply, you let people know. In these days of electronic communication it is very easy to keep people appraised of what you are doing and what is available. Then there is Public Relations (PR), and sending out press releases is part of it but there is so much more.

And that applies to us as much as anyone else and accuracy would be part of our professionalism. Which went rather awry in the last issue, in the USB article I did say that the Castle USB card wasn't available and that the software wasn't stabilised. Castle got in contact with me to say that that wasn't actually the case, that the card is available and the software is stable. Which really made a nonsense of the whole article. Sorry about that.

More importantly, we delayed this issue slightly because we expected something interesting to happen at the Midlands Show. Well, on the down side, the weather was really bad and the attendance was not what had been hoped.

However on th plus side, and it really is a major plus, the Iyonix PC from Castle was available to buy. And, in terms of professionalism, that was one of the smoothest operations we've seen in the RISC OS market for a long time. We, at Acorn User, had expected it but after so many disappointments in the past even we felt a little concerned. But it was there, about 50 machines, and the Acorn User stand was in just the right position to see the buying public actually buying them and walking away with the boxes.

Castle Technology have delivered what they promised and that is the most important news of all. In my office right now I have an Iyonix PC and the team will be pulling it pieces, literally as well as metaphorically and together we will give you a thorough review. The future of RISC OS has arrived and you can buy it right now.

Rob Donaldson

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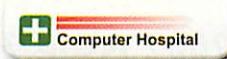
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Choice of Windows 98/ME/XP
All system s/w installed and verified,

Office pack incs;
MS Works or Ability Office
Epson Stylus C42UX printer
Gaming pack incs;
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Rage Warrior J/S
Focus game of your choice

low cost upgrades available e.g. to 1900 XP £38.30 +, to 512MB £30 +



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All system s/w installed and verified,

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£299.95 +vat
(£352.44)
(3 yr warranty)

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AKF52 Multisync 14" 1yr RTB	£100.0	£117.50
15" LCD (3yr on-site)	£212.00	£249.10
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22" Iiyama 2010	£374.00	£439.45
Multisync A300/A3000 cable	£8.50	£9.99

All monitors inc 3 yrs wty unless specified

Refurb MONITORS

19" Taxan Ergo only £116.32 inc

	Ex VAT	Inc VAT
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AKF52/53 M/sync Svga/Pal	£65.00	£76.37
AKF60 14" SVGA	£30.00	£35.25
AKF65 M-Media 14" SVGA	£42.00	£49.35
15" SVGA 0.28	£51.06	£60.00
15" M-Media (Sony Trinitron)	£60.00	£70.50
19" SVGA (Taxan Ergo)	£99.00	£116.32
21" SVGA (Iiyama,Taxan etc.)	£149.00	£175.08
Multisync A300/A3000 cable	£8.50	£9.99

All refurb. monitors 90 days wty unless specified

PRINTERS



Lasers may differ from one shown

Mega-Deal Kyocera 1550 only £69.00 inc. VAT

units are refurbished with 90 days wty

		Ex VAT	Inc VAT
Postscript colour Inkjet from	A4	£199.00	£233.83
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Postscript B/W Laser	A4	£225.00	£264.37
Canon BJC S520 Photo €	A4	£85.10	£99.99
Canon BJC S750 Photo #	A4	£127.65	£149.99
# Photo Drivers for		£58.72	£69.00
€ Needs RiscOS Driver		£20.00	£23.50

3.5" IDE Hard Drives

	Ex VAT	Inc VAT
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500MB / 1GB	£30.00	£35.25
10.2GB *	£44.00	£51.70
20.0GB *	£48.50	£56.99
30.0GB *	£53.00	£62.28
40.0GB *	£63.00	£74.03
60.0GB *	£69.00	£81.08
80.0GB *	£74.00	£86.95
120 GB *	£127.00	£149.22

SCSI HARD DRIVES

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9.1Gb (7200 rpm)	£70.00	£82.25
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36.4Gb (15K rpm)	£299.00	£351.32
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Optical Wheel Mouse RSM330



RS7500 /A7000 etc.
only £14.95 inc
(£12.72 + VAT)
RPC Version
£34.50 inc.

Optical / Radio Mouse RSM400

RS7500 /A7000 etc.
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(£34 + VAT)
RPC Version
£58.95 inc.



Radio keyboard & mouse



£34.00 + VAT (£39.95)

MEMORY

	Ex VAT	Inc VAT
8Mb SIMM EDO/FPM	£6.49	£7.63
16Mb SIMMEDO/FPM	£12.00	£14.10
32Mb SIMMEDO/FPM	£17.00	£19.98
64Mb SIMMEDO/FPM	£35.00	£41.12
64Mb SIMM RS 50ns	£45.00	£52.87
128Mb SIMM from	£85.00	£99.87
1Mb VRAM	£20.00	£23.50
2Mb VRAM	£69.00	£81.08
128MB 133M SDRam	£10.21	£12.00
256MB 133M SDRam	£18.72	£22.00
512MB 133M SDRam	£34.89	£41.00

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Carriage charges inc. ins. & packaging charged at cost
Small items (under 2Kg).....no more than £6 + vat
One box of items totalling upto 25kg...£7.00 + vat
Computer systems...................................£14 + vat
All prices are correct going to press. E&OE
All goods are fully guaranteed but not supplied on approval.

Iyonix specifications released

Castle Technology have released the full specifications for their new Intel XScale-based RISC OS 5 computer.

Castle previewed Iyonix PC at the Guildford Show last month (read on for a full show report), and stole the show with fast PCI graphics, 32-bit version of RISC OS, USB and PCI.

Iyonix PC full specification is as follows:

- Iyonix Motherboard
- All new design
- 600+MHz ARM XScale processor (Intel 80321)
- GeForce2 MX400 PCI video card
- Up to 1GB DDR (Double Data Rate) memory (200MHz)
- UDMA 100 Hard Drive
- PCI expansion (32-bit and 64-bit)
- Hi-speed podule bus
- Gigabit networking (10/100/1000 base T)
- Technical Reference Manual (to be published)

Case (front)

- MicroATX mid tower design
- 2 5.25" drive bays
- 3 3.5" drive bays (2 external)
- Soft-on (computer controlled off)
- 2 USB ports
- Recessed reset button
- HD and Power LED on front

Case (rear)

- 250 Watt PSU with two-speed fan
- Power on/off (hard)
- 4 PCI Slots (2 32-bit, 2 64-bit)
- 2 Hi-speed podule slots
- Networking
- 2 USB ports
- 2 serial ports
- Mains in
- RISC OS 5, 32-bit with video extraction
- Video now from PCI graphics card
- Feature set based on RISC OS 4.02
- Pace derived and copyright
- Dedicated Iyonix version
- Long filenames
- 128MB wimpslot - application space
- ICA client
- Font manager with Unicode support
- USB printing
- OS in Flash ROM, copied into RAM on boot

Because of the need for applications to be 32-bit to be compatible with Iyonix, a number of developers have already announced 32-bit versions of their software, and the list is growing almost daily.

David Pilling has announced a 32-bit version of Ovation Pro, Icon Technology already have 32-bit version of Techwriter and Easiwriter. Cerilica were showing their 32-bit version of Vantage at the Guildford show and the Pineapple VProtect module is also now 32-bit capable with version 4.03.

You can still enter the draw to win an Iyonix PC by registering on the Iyonix web site at **http://www.iyonix.com**

Iyonix in the Capital

Jack Lillingston, Managing Director of Castle Technology, will be demonstrating Iyonix PC at the RISC OS Group of London (ROUGOL) user group meeting on Monday 16th December 2002, 7:30pm for a 7:45pm start

The group meet at The Blue-Eyed Maid (upstairs), 173 Borough High Street, London SE1 1HR

This should be an ideal opportunity to hear the inside story about the Iyonix, ask questions, find out what has changed and maybe even try it out yourself.

The venue is between London Bridge and Borough tube stations, so readily accessible by public transport. (On street parking is also available, and mostly free after 7pm, but not necessarily recommended if you're not confident driving in Central London).

Admittance is free, and a wide range of snacks, hot food, and alcoholic and non-alcoholic beverages will be on sale. In particular, the Blue-Eyed Maid is unusual for its "spice lounge", whereby a variety of authentic Indian dishes are available.

Maps can be found by using the postcode above in conjunction with **www.streetmap.co.uk** or **www.multimap.com**

Alternatively, if you need any further assistance of any sort in reaching the venue, or any other details, please contact ROUGOL as below.

More 26-bit applications for Iyonix

Aemulor.com have announced the release of their Web site, which gives more information on the 26-bit emulator for Iyonic PC. After demonstrating an early development version at the Guildford show, the Aemulor team have been busy re-writing the software into XScale-optimised ARM assembler (the previous version was written in C)

The Aemulor team have also released more details on applications they have running under Aemulor, which now include:

Artworks
AWViewer
Impression Publisher
Impression Style
Wordworks
Zap
StrongEd
Photodesk
TopModel

The Aemulor support and discussion forums contain a great deal of information about development progress, coding for the Intel XScale and general emulation discussion.

www.aemulor.com

RISC OS 4 price drop

RISC OS Ltd have reduced the price of the RISC OS 4 upgrades. This follows the securing of further OTP ROM supplies.

With immediate effect the full RISC OS 4 ROM pack is now available for £85 including VAT. For users who want to upgrade more than one machine a set of ROMs only is available for £75 including VAT.

Discounts are available for Dealers, Authorised Installers and User Groups who place orders in bulk. Orders may be placed by Cheque or Credit Card by Post to: RISCOS Ltd, 3 Clarendon Road, Cardiff CF23 9JD. Tel: 02920 492324 Fax: 02920 492326 E-mail: **sales@riscos.com**

RISC OS User Group Of London

info@rougol.jellybaby.net
http://rougol.jellybaby.net/
07785 935 497

GCC/GCCSDK 2.95.4 release 2

GCC is a free collection of compilers that provide the user with a powerful tool for translating C, C++ and Fortran source into fast ARM assembler that is suitable for execution on RISC OS.

GCCSDK is a portable build environment for creating ARM executables to be run natively on RISC OS. The build environment is designed to be hosted on a Unix-like system, such as GNU/Linux, FreeBSD or Solaris.

This is the second release of GCC 2.95.4 and focuses mainly on usability bug fixes, compiler and C run-time library fixes.

The compilers are large programs and will require at least 6Mb of free memory to execute, so you will either require a Risc PC or a an 8Mb machine. See **http://hard-mofo.dsvr.net/gcc** for download information.

The authors consider this to be the best version of GCC for RISC OS and recommend that all existing users upgrade to it. The compiler toolset should be considered stable.

For full download instructions, mailing list information and bug reporting instructions, please visit **http://hard-mofo.dsvr.net/gcc** the main distribution for GCC.

LogosWord 4.8

LogosWord is a Bible Study software package, now at version 4.8.

The offer of a 20% discount on the NASB Bible Study module when purchased with LogosWord is still available. To read the new improved 'preview' page (with snapshots) of this very useful study pack (which includes the highly-acclaimed NASB translation, Hebrew and Greek lexicon/concordances, study outlines and the extensive NASB cross-references and translators notes) go to **http://www.logosword.co.uk/LogosUser/packs/NASBinfo/index.shtml**

LogosLite is a Bible text viewer, now at version 3.26.

If you have previously downloaded lexicon plug-ins from the LogosWord Web site, you should be aware that the names of the free Greek and Hebrew lexicons have changed. They are not called "Strongs" anymore, but there are two new Greek and Hebrew lexicons added to the collection which are called "Strongs". If you want to make use of the new lexicons, your safest bet is to download the new ones plus the renamed originals (now called 'Thayers' and 'BDB').

To view the ever-increasing list of resources available for LogosWord, go to **www.logosword.co.uk/logos.shtml**

Contents to date:

- Bible Translations (31)
- Bible Commentaries (12)
- Bible Dictionaries (8)
- Bible Lexicons (6)
- Other Resources (3)

Demo version of all the above may be downloaded from the logosword Web site at www.logosword.co.uk

Mico Joystick driver

A joystick driver for the Microdigital Mico computer (which has a PC gameport mounted on an ISA soundcard) is now available for download from the authors.

- The joysticks are polled periodically in the background to ensure that responsiveness is not determined by how often the Joystick_Read SWI is called, and also that a succession of calls do not each trigger a time-consuming read operation.
- Joysticks may be calibrated to return values in a standard range.
- Graduated smoothing function to alleviate 'jitter' (range of smoothing is configurable on a per-axis basis, or may be disabled entirely).
- Optional 'dead zones' to make it easier to hold a steady centre value or consistently reach the extremities of the joystick's range.
- Auto-detection of joystick characteristics, with dead zones and smoothing ranges being set automatically for each individual axis.
- Extensive set of Star Commands that allow detailed configuration of the driver, calibration values to be set for individual joystick axes, and tabular display of calibration values
- Supports all the standard Joystick SWIs, including the 16-bit read and calibration SWIs introduced in RISC OS 3.6.
- Supplied with joystick calibration and test program, comprehensive user manual and programmer's documentation.

The URL to download the software is **www.bigfoot.com/~chrisbazley/games.htm#micojoy**

Note that since the module is written in C it requires a version of the shared C library that supports the APCS-32 calling standard available from **www.bigfoot.com/~chrisbazley/download/32bitModules.zip**

USB Scanner from Castle

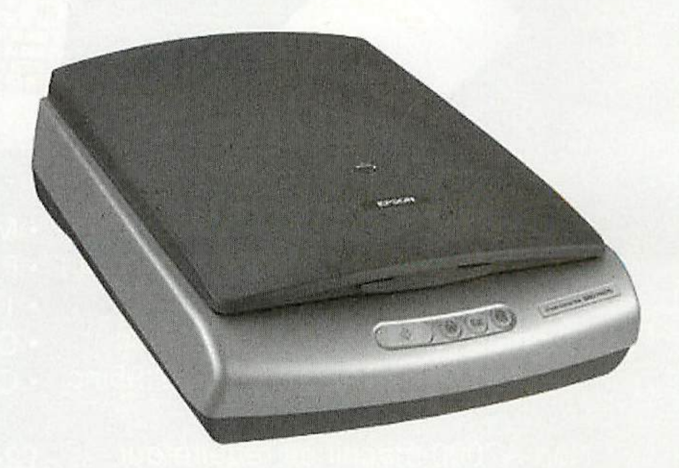
Castle have released a new low price A4 USB-based scanner package:

- 48-bit colour scanning
- True 1600 x 3200 dpi scanning
- Built-in transparency unit
- High speed scanning (A4 scan at 300dpi takes about 26 seconds)
- TWAIN 2 driver included

The basic scanner price is £199 inc VAT

For those who don't have an Iyonix PC, Castle's 4 port USB podule can be purchased for £59 inc VAT. David Pilling's Scanning Software can also be purchased for £20 inc VAT. Castle are offering free delivery on the USB podule and software if purchased alongside the scanner. To order please go to: **www.castle.uk.co/castle/imaging.htm**

Castle Technology Ltd, Ore Trading Estate, Woodbridge Road, Framlingham, Suffolk, IP13 9LL. UK
sales@castle.uk.co
Tel: 01728 723200
Fax: 01728 727427



Need access to a PC but don't have space for a new monitor, keyboard and mouse?

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We can supply off-the shelf or custom PC base units to your requirements.

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All machines come with internal modem, our Multimedia Keyboard, Wheel mouse and Loudspeakers.

- Windows ME or XP, add £80inc VAT, MS Works, add £20inc VAT.

STEP 2 - Add our Keyboard Controlled Switch

This miniature switch allows keyboard, monitor and mouse to be shared between two machines.
Modified for RISC OS macines, rated to 1920x1440 display, complete with all cables.

- Supplied as a pack including our PS2MouseMini interface : £99.95inc VAT (Was £113.90)

- Above pack when purchased with PC base unit: £90inc VAT (was £100)

- Keyboard Controlled switch alone: £89.95inc VAT (was £99.95)
- PS2MouseMini Interface (allows PC mice to be used on RISC OS machines): £18.95

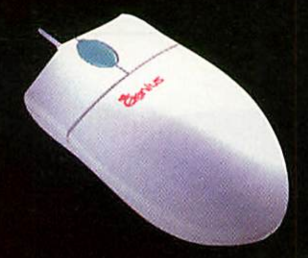
(not to scale - it's about the size of two kitchen machboxes!)

STEP 3 - Attach to your existing RISCPC/A7000 and monitor

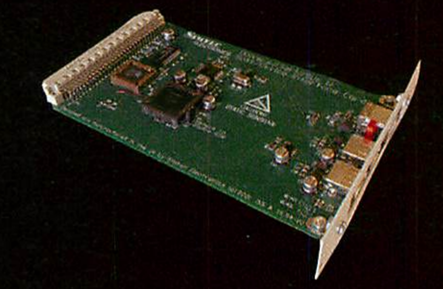
Add a networking pack if required.......
... and switch between the two with a couple of keypresses.

Mices! MMK! USB!









- STD Standard Mouse £19.95inc (Acorn mouse port, PS2Mini not req.)
- 3 button PS/2 mouse £5.95inc
- Genius Wheel mouse £12.95inc
- Genius OPTICAL mouse £17.95inc

Non-A7000 machines require our PS2MouseMini interface £18.95inc.

- Multimedia Keyboard
- For RISC PC / A7000 etc
- 19 Multimedia keys
- Complete with Drivers
- Click/non click versions

£24.95 inc VAT (was £34.95)

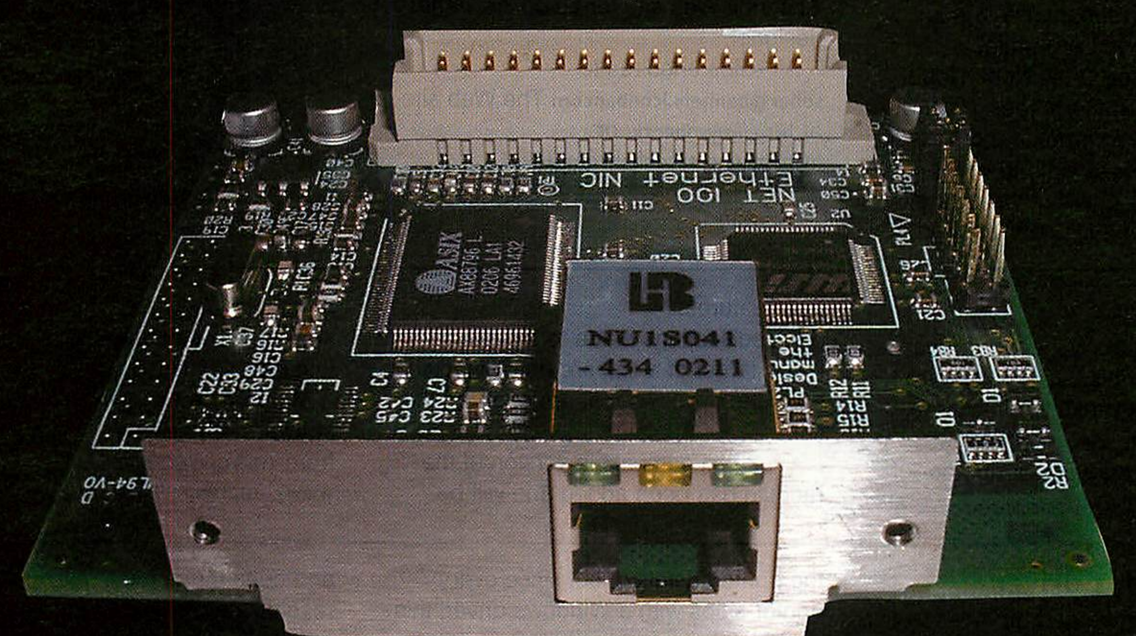
- Simtec USB Card.
- Supplied with keyboard mouse and joystick drivers.
- Drivers for other devices Available.

£79+del+VAT = £99inc

Long Long ago, in a place not far from here, there was a dream of a new standard. The new standard would allow RISC OS machines to be integrated into fast networks. It would enable fast file transfers. It would reduce latency and congestion on busy networks.

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That reality is......



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- High integration brings affordable networking

Only £69+delivery+VAT = £89inc
Pack to link RISC OS to PC (NET100, PC Net card, Crossover cable) = £110inc
Pack to link 2x RISCPC or A7000 (NET100x2, Crossover cable) = £185inc
High performance network switches: 5 port = £45inc; 8 port = £75inc
LanMan98 £35. Cables and other networking devices available.

Remember - all calls to our 0845 number are charged at local rate.....



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This Month: NET100; USB card; VirtualAcorn with PC's; Monitor, keyboard and mouse sharers; Multimedia Keyboards; Genius Mice

Wear your OS with pride

Sober are pleased to announce Acorn/RISC OS T-Shirts. For as little as £5.99 you could be the proud wearer of one of their top quality "soft-wear".

You can either use their pre-made design (see picture) or send them your own design and they will produce it. Prices are as follows:

Front Design Only	£5.99
Back and Front Design	£6.99
P&P for 5 items	£1.00 per item
P&P for 5 items	£5.00 total

Send orders to: Jonathan Tyreman, Sober Sales, Young Enterprise, Egglescliffe School, Urlay Nook Road, Eaglescliffe, Stockton-on-Tees TS16 0LA

Please include your name, address, e-mail address, phone number, order code (or attach your design if made by their online t-shirt designer), size required (S/M/L/XL) and a cheque for the correct amount.

If you wish to use your own design please send it as GIF or JPEG format on a floppy disc (DOS 1.44MB) or CD with your order, it will be returned to you with your t-shirt. Using copyright, registered or trademarked symbols is not recommended, check first.

These make ideal Christmas presents, and the first deliveries should be within 21 days (earlier depending on demand). They also do non-RISC OS T-Shirts – visit their Web site for an online T-shirt designer.

All sales enquires to **sober@banners.iconbar.com** The Web site is at **http://mysober.tk/** or **http://banners.iconbar.com/sober/**



LinkFS 2.00

Tom Hughes has announced the release of version 2.00 of his LinkFS software for providing symbolic links to directories.

V2.00 is a complete rewrite of the original software that fixes a number of minor bugs and also introduces several new features:

• Modifications made to a directory that is the target of a link are now reflected in any Filer windows that are open on the link.

• A 32-bit compatible version of the module has been added and will be automatically loaded on machines with an appropriate runtime environment installed.

More information, including the software itself, is available for download from Tom's Web site at **www.compton.nu/linkfs.html**

Universal print driver

R-Comp have announced the release of a universal network printer driver, which allows you to print to any printer connected to a PC over a network even if that printer does not have a RISC OS driver.

How does it work?

The system relies on a printer being connected to a Windows PC on your network (Windown 95 to XP supported). The PC must have a working driver for the printer installed, but since every printer ships with a Windows driver, this shouldn't be a problem.

The RISC OS machine then prints to the PC, which prints out the job natively, using the quality settings available through the Windows driver. Since the system integrates with !Printers, it should work with any application. R-Comp have tested with Impression, Artworks, Ovation Pro, Techwriter, Paint, Photodesk.

The RISC OS software offers various resolutions, but because the Windows end does the printing, even low resolutions give excellent results.

The universal driver costs £35 which includes both the RISC OS and Windows driver software and VAT and UK delivery.

R-Comp Interactive, 22 Robert Moffat, High Legh, Knutsford, Cheshire WA16 6PS

Tel: (+44) 01925 755043

Fax: (+44) 01925 757377

www.rcomp.co.uk

ZAP 1.45 released....finally!

It's been over four years since the last "official" release of the RISC OS text and source code editor Zap, with all releases in-between being classed as development or beta.

There are 100's of improvements, new features and bug fixes in the new version over 1.40, including Viewfinder support.

Zap can be downloaded from **http://zap.tartarus.org/**

Broadband in every home

Every household in South Korea will soon have broadband Internet access. The $10 billion cost of this program will come from South Korea's largest telecom company, KT Corp, along with several other ISPs. The government will also make loans available to help fund the rollout.

The target is for all households to have broadband by 2005. South Korea is already the most wired country in the world, with 10 million high-speed net connections in its population of 48 million

Japanese pet hunger

Japanese globetrotters will no longer need to worry about their pets' hunger pangs, thanks to a new Internet-based remote feeding gadget. Coined iSeePet, the 3kg device consists of a water tank and food dish equipped with a Web camera. iSeePet stores enough food to feed a small animal for three to four days.

Owners can control the amount of food dispensed through the Web interface, in addition to monitoring the feeding process via the attached camera. They will have to pay a monthly subscription fee of $32 for the service operated by telecommunications firm NTT-ME, in addition to a one-time installation charge of $1,448.

Other news

Trusted or treacherous?

Microsoft touted its upcoming Palladium architecture as good for business and privacy, while critics slammed it as a "big brother" technology. Microsoft claims that Palladium would enhance privacy, stymie piracy and increase a corporation's control over its computers. Instead of just keeping hackers out, critics say programs like Palladium could also block computer users from certain data.

"Trusted computers" will be equipped with a hardware chip and software that will wall off data, secure communications, and verify the characteristics of their system. The new software and hardware could secure VPNs (virtual private networks) by allowing administrators to positively identify computers on the network. Corporations could require the use of trusted computing technologies that could throw away the digital keys to any message more than one month old.

Trust is a key component of the future of computing. An environment where trust is established will help to stop software and content piracy, promote e-commerce, and identify the source of anonymous attacks and viruses. But it could also be used by Microsoft to cement its control over PCs and help destroy third-party software providers.

Ironically, it could also backfire on Microsoft, as consumers could choose only hardware and software that doesn't support Palladium technology. As RISC OS hardware and software will stay well clear of this "big brother" this could open up a huge potential of customers for RISC OS hardware and software if we take advantage of it.

Computing today is like the "wild west," where gunslingers come to town and create havoc. But there are significant concerns around making Microsoft the sheriff. It's clear after the Microsoft anti-trust case that the government and competitors have little ability to stop or guide Microsoft in its desktop stronghold. And few people believe that Microsoft won't use its Palladium power in its own interests. So the "townfolk" shouldn't rely on the gunslingers (hackers) to crack Palladium and explode secure computing as a myth.

Japanese to throw out Windows?

The Japanese government is reviewing the possibility of no longer using Microsoft's Windows operating system as part of its plans to boost computer security within the government. Most of the government's servers and personal computers use Windows software.

The government is interested in studying alternative operating systems, especially open source programs such as Linux. The Ministry of Land, Infrastructure and Transport will set up a panel of experts to study the alternatives and what systems other governments use in the next fiscal year beginning April 1.

Polymers could push Internet speed

Researchers at Bell Labs have cleared the first hurdle to potentially increasing Internet speeds to well above today's fastest rates. The scientists at Lucent Technologies' research arm have demonstrated in a controlled laboratory setting that certain polymer materials have physical properties to channel data signals at tremendous speeds.

Polymers are chemicals made of large molecules in repeated structural units. The rate could approach 145GHz — much faster than widely used optical networks that typically clock in at about 10GHz, or 10 billion cycles per second. The advances could enable the transfer massive video and audio files in real time.

Surgery robot makes 007 film debut

A surgical robot normally confined to the operating theatre is to make its acting debut in the latest James Bond movie. The robot, known as Da Vinci, is usually used at Imperial College London to perform keyhole surgery. But Da Vinci also shares a scene with secret agent James Bond in the latest 007 action film. In the movie, the robot's three mechanical arms are seen waving over Bond's body after his enemies capture him. The device was developed to avoid unwanted tremor movements caused by surgeons' hands.

Feeling lethargic? Blame the PC

Japanese researchers have found that prolonged daily computer use can make you sore and sap your strength, energy and motivation. In a three-year study of more than 25,000 workers, Japanese researchers discovered that people who sat in front of computer screens were more likely to experience physical pain such as eye and shoulder strain, and to suffer from motivational symptoms such as lethargy.

The study found that workers who spent more than five hours per day in front of a computer screen also reported significantly higher complaints of sleep-related symptoms and mental stress.

Microchips weigh heavily on environment

The production of a microchip requires a hefty amount of materials, energy and water, and has an environmental impact that far outweighs its miniature size. Researchers estimate that producing a single 2-gram chip used for memory in personal computers requires 3.5 pounds of fossil fuels, nearly a quarter pound of chemicals, about 70 pounds of water and 1.5 pounds of gases such as nitrogen.

Dino-robot promises mobile assistance

Sanyo has unveiled a dinosaur-shaped home robot. "Banryu" can be controlled remotely using a mobile phone. It possesses infrared, sonic, temperature and odor sensors to detect problems when the owners are away. It can also move at speeds of up to 15 meters a minute. Sanyo plans to build and sell 50 robots by the end of next year. They will be available in Japan for $16,350 each.

Smart paint creates chameleon tanks

The U.S. Army is developing tanks that can repair themselves and change color on the battlefield. Military vehicles including tanks, trucks helicopters, and weapon systems will be covered with a coating that has been embedded with nanotechnology. If the tanks are corroded or scratched, they will be able to detect it and heal themselves. Perhaps most importantly, tanks would turn chameleon, creating instant camouflage and becoming virtually invisible on the battlefield.

Shaky shoes could boost balance

Vibrating shoes that use random noise to amplify subtle signals to the brain could stop people who are unsteady on their feet from losing their balance. Normally the nervous system automatically corrects posture.

But some people, particularly the elderly, have trouble picking up these signals and sway much more than normal. Scientists hope to develop a vibrating insole that unstable walkers could wear in their shoes. The challenge is to power them without heavy battery packs.


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Big pictures

One of the best ways of learning about graphic design is to look at what other people have done. Note what works and, possibly more importantly, what doesn't. This does not mean wholesale copying of someone else's ideas, but in a general sense, replicating effective design schemes. Next time you see a wall of posters try to notice which ones stand out, and which ones you'd have to make an effort to read.

A poster is a picture or notice stuck on a wall, but posters have often been regarded as quality examples of popular art. There are posters which have become icons, others literally works of art. Posters are now an integral part of the mosaic which forms our everyday lives. They can be regarded as a nuisance, or a colourful element in a drab urban environment, or something to read on the bus, or - and this is their prime purpose - a method of conveying information about a specific event.

These do not have to be national events either; there is a tradition of making posters for local events from jumble sales to lost cats. Whereas before these might have been lovingly produced by hand, the rise of desktop publishing has multiplied the amount of amateur designers composing and printing posters for display in church halls, local shops and libraries. While it's great that posters can be produced by just about anyone, not all of them are fulfilling their purpose effectively. The poster needs to grab the individual's attention and draw them in to reading the necessary details. If the artwork is bland and uninteresting, that's going to be all the more difficult.

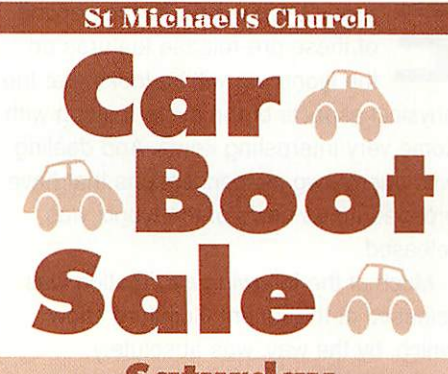
In my opinion, one of the keys to producing a successful poster is the use of dynamic range. That is, choosing which elements of the poster to emphasise, and which can be played down. Let's take a simple example: we're going to design a one-colour poster to publicise a car boot sale. The first thing to do is write down all the information that's needed for the poster:

St Michael's Church
Car Boot Sale
Sunday 10th November 2002
10am-1pm
At the church hall car park,
High Street
Cars £5, admission free
Proceeds towards the roof fund

Now, have a look at what you've written and grade the elements according to their importance. You want to mention who is organising the event, but it's not that important to the passer-by, so 'St Michael's Church' doesn't have to be prominent. The most important element, 'Car Boot Sale' will have to be what people see first, so that has to be clearly visible. Anyone interested will be drawn by these words, and will then make the effort to find out where and when. The date is quite important: it's good to see quickly when it is. The other minor details don't have to be hugely conspicuous, because people may read the poster to find out more. You might decide that that purpose of the event is worth mentioning - you may attract more people if they know it's for a good cause.

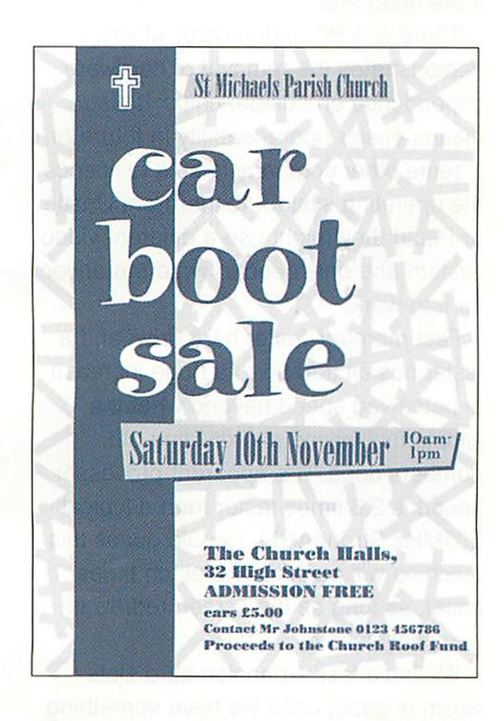
OK, you know what you want to say, but how do you convey it? With the superabundance of fonts available to the modern computer designer, it's tempting to use fancy or interesting fonts, but if it's difficult to read, it's a waste of time. We don't want to have to work to read posters, and you may lose potential interest if you make us.

I have started by bounding the poster top and bottom with a dark border, defining the space between. In the top one I've placed 'St Michael's Church', allowing it to become part of the design. It won't matter that your eye will not be drawn to it first. Then I've used a sans serif bold font in a large size for 'Car Boot Sale'. I want it to be seen from a distance. All other elements are secondary, because if you see it from the other side of the road, and you're interested, you'll cross the road to find out more. Then I'll add a piece of clip art - the car - to spice it up a little (but I've rendered it in a pale tint of the main colour so that the main message is not obscured or upstaged). The time and date is next, and I've added a tinted panel behind it so that it's easily understood, but still secondary to the main element. All other elements are accessible to those who want them.



We can be a little more adventurous with the design, but the principle remains that it must be readable at a glance. This time I've used a vertical band through the whole poster as a bold design element and created a quick background to add texture. I'm using a more informal font, but making sure that 'Car Boot Sale' is the first thing that's seen. The subsidiary elements can be read clearly once one's attention has been grabbed.

A little thought about who your audience is, and what they need to glean from your poster makes a big difference.



Nigel Gatherer
graphics@acornuser.com

Iyonix: Feature City

Excited? You will be. In the second of these pre-release features on the Iyonix we will be looking at the physical aspects of the system along with some very interesting items. And dealing with one or two misconceptions that have cropped up as news of the Iyonix was released.

Much of the following information was released at the recent Guildford show which, by the way, was absolutely packed. We'll take each part section by section and see what it all means.

Iyonix motherboard

- All new design
- ARM XScale processor (80321)
- GeForce2 MX400 PCI video card
- Up to 1GB DDR (Double Data Rate) memory (200MHz)
- UDMA 100 Hard Drive
- PCI expansion (32-bit & 64-bit)
- Hi-speed podule bus
- Gigabit networking (10/100/1000 base T)

It had been suggested that this board was based on the Phoebe board, in fact our editor suggested it, but it seems not. And we have 80321 XScale, running at 600MHz or more, naturally now that we have a 32-bit operating system and faster board unit it is a simple matter to upgrade the processor in later models as and when they become available. No more dead end.

There is a PCI video card, which demonstrates the removal of hardware dependence on custom chips. It also means easier upgradeability in future or, if some other company is able to licence the operating system (either from Castle or Pace) they might use a different video system and only need to write the driver for it to work.

Fast memory, faster hard drive and a faster bus all add up to a huge increase in perceived speed beyond what the simple multiplying and dividing of numbers does. The apparent processor speed is 2.6 times faster than a typical 233MHz StrongARM. I would guess this machine will potentially feel ten times faster, as long as the screen redraw is genuinely faster.

We have fast expansion card slots which is good, once we have something to plug in, and we have very fast networking. That will be very nice.

Physical appearance

- MicroATX mid tower design
- 2 x 5.25" drive bays
- 3 x 3.5" drive bays (2 external)
- Soft-on (computer controlled off)
- 2 x USB ports (front)
- Recessed reset button
- 250 watt PSU with two-speed fan
- Power on/off (hard)
- 4 x PCI Slots (2 x 32-bit, 2 x 64-bit)
- 2 x Hi-speed podule slots
- Networking
- 2 x USB ports (rear)
- 2 x serial ports

Nothing particularly exciting here but interesting to note the software controlled on-button and the USB ports at the front and the back.

However it should be noted that there is no parallel port. If that is a cost saving exercise then it is pretty dubious.

RISC OS 5

- 32-bit with video extraction
- Feature set based on RISC OS 4.02
- Long filenames
- 128MB wimpslot - application space
- ICA client
- Font manager with Unicode support
- USB printing
- OS in Flash ROM, copied into RAM

Now it gets interesting, contrary to early rumours, which even we managed to propagate, RISC OS 5 does have long filenames formats. This is because up to version 4.02 the changes from RISCOS Ltd were fed back into the Pace source, hence the presence in RISC OS 5.

Even more interesting is the 128MB wimpslot, previously only 28MB was supported. Many applications have gone to using dynamic areas instead of the wimpslot for storing data so this may not be the most important change in the world.

Having the ICA client as standard will not be very important to the majority of people but will have some applicability in education and possibly business networks. The 1Gbit networking is particularly interesting with this.

Unicode support will become more and more significant, having the Font manager able to handle the Unicode character set is critically important for future Web browsing. Let's hope that Oregano 2 uses the standard font manager now, and that Truetype support follows quickly.

32-bit software

- BASIC programs will work without any work needed
- C/C++ programs work after recompiling
- Assembler programs need simple re-engineering
- 32-bit software will run on RISC OS 3, 4 & 5
- Wide range of software already 32-bit: Techwriter (Easiwriter), Fireworkz, Ovation Pro, Vantage, OHP, Oregano 2, Draw, Paint, Edit, PDF, AMPlayer, InterGIF, KINO, SparkFS and so on
- Aemulor 26-bit emulator available

We are covering this in more detail elsewhere but the application list is impressive already. We have spoken to many other developers both for freeware and commercial software who are making the necessary 32-bit changes, many of them are advertising in this issue.

But, of course, neither Artworks nor Impression are in this list. Which is where the Aemulor comes in, it has already been seen running Impression at a reasonable speed, it is being developed to go even faster, and will handle most 26-bit software. Frankly if it can run Impression I'm guessing it will run almost anything.

This is all still theoretical however hopefully in the very next issue of Acorn User we will have the real McCoy under review.

Theoretical speed increases

SA Risc PC	Iyonix	Better by	
Processor	233MHz	600+MHz	2.6
RAM	16MHz	200MHz	25.0
Hard Drive	2MB/s	32MB/s	16.0
Expansion bus	8MB/s	240MB/s	30.0
Podule bus	4MHz	8MHz	2.0
Resolution (16M)	800x600	1920x1440	5.8
Screen draw	4.32 sec	0.99 sec	4.3

Steve Turnbull
stevet@acornuser.com

Writing 32-bit Software

Strictly speaking we shouldn't refer to the 'Intel XScale processor' because Intel insist that XScale is actually a 'micro-architecture' and not a processor. Instead of 'Intel XScale' we should really introduce it as 'The Intel™ IOP321 I/O processor, with Intel™ XScale microarchitecture'.

References to Intel XScale processor should then refer to an 'ARM processor implementing the Intel XScale microarchitecture'. Intel's lawyers apparently get upset about incorrect usage in technical documents and on Web sites. For brevity and simplicity I have used the term 'Intel XScale' here and it is the editor's decision to leave it like that.

Introduction

Last month I gave an overview of the new Acorn C/C++ Development Environment CD which is now available from Castle Technology Ltd. It is a major upgrade to Acorn's original C/C++ pack with 32-bit versions of the compiler and other tools and many new features, including support for many C99 features.

The CD also includes updated Acorn C/C++, Acorn Assembler, and Tools manuals and the full RISC OS 3 Programmer's Reference Manual (volumes 1-5 and 5a) and RISC OS 3 Style Guide in PDF format. These manuals all include indexes and make good use of the cross-reference facilities available in PDF.

The latest versions of Zap, StrongEd, Perl, FTPc and PDF are also included, although freely available on the Internet it is useful to have these essential utilities provided on the CD, if only to raise awareness of them.

As if that wasn't enough Castle is now including a new version of the ABC Compiler which was previously available from Pineapple Software and SID, an ARM disassembler and analysis tool.

This month I'll describe ABC and explain why and how to update existing software to run in a 32-bit environment. In particular, I'll explain the changes to expect in some RISC OS API (Application Programmer Interfaces) and discuss changes that must be made to assembler programs to make them suitable for all ARM processors.

Compatibility

Since last month's article several people have contacted me expressing concern that developers must now choose whether to develop software for 32-bit environments or whether to stick with the existing 26-bit market which currently has more users. Fortunately, this is not the case.

Let's be absolutely clear, software that is produced for a 32-bit version of RISC OS will still work with a 26-bit version of RISC OS. The same version will work on the whole range of RISC OS computers from an ARM2-based Archimedes running RISC OS 3.10 to an Iyonix PC using an Intel XScale and RISC OS 5. Developers do not need to choose which machines to develop software for, they can develop for the whole range using Castle's latest 32-bit tools. Distributors will not need to stock 26-bit and 32-bit versions, updated software will work on the whole range of machines.

For the assembler programmer, writing code that works on 26-bit and 32-bit processors can require a little thought, as explained below. Fortunately, C and BASIC users have it easy as Castle's tools do most of the hard work for you.

ABC BASIC Compiler

The ABC BASIC Compiler has been updated to run in a 32-bit environment and it generates 32-bit code suitable for running RISC OS 3.10 to RISC OS 5. A comprehensive release note covers its use, but the full manual isn't included at present as the original electronic copy of the manual has been lost.

ABC compiles BBC BASIC programs into ARM machine code which runs significantly faster than interpreted BASIC and it is often smaller too. With today's fast computers execution speed is less important than it was, but compiling BASIC programs also provides a convenient way of packaging them up to deter casual observation of the program code.

The ABC compiler is more rigorous about syntax than BBC BASIC and places some extra requirements on the programmer. This isn't too much of a problem for properly written programs using good programming style and structure but may catch out the unwary.

The compiler also provides some new features which are not available in interpreted BASIC. For example, constants may be declared which enables the compiler to generate more efficient code and to ensure that the value is not erroneously changed at run-time.

Early versions of the CD didn't include ABC or the Programmer's Reference Manuals as Castle were keen to make the 32-bit tools available to software developers as early as possible and well in advance of their new 32-bit Iyonix PC being launched. Everybody who bought an early CD should have received an update by now with updated software, ABC and the manuals included.

What is 32-bit?

What do we mean when we talk about 32-bit processors? Isn't the ARM already 32-bit? Well, yes, it is. The ARM architecture has always used a 32-bit word length, a 32-bit data bus and 32-bit registers. Indeed, the early Archimedes was promoted as being a 32-bit computer to replace Acorn's earlier computers based on the 8-bit 6502 microprocessor.

However, while the data bus has always been 32-bit, the address bus and the Program Counter (PC) on the ARM2 and ARM3 processors were only 26-bits wide, thus limiting the maximum amount of addressable memory to 64MBytes. This meant that less address pins were needed on the chip and it also gave the original ARM designers a cunning way of improving performance, as explained in '26-bit Mode' below.

The ARM6 introduced ARM architecture version 3, providing a full 32-bit address bus and 32-bit program counter, but it also provided a 26-bit compatibility mode which was used by RISC OS and by all RISC OS applications. This limited the amount of memory that could be used for executable code, and this results, for example, in the maximum application slot size of 28MBytes in RISC OS 3 and RISC OS 4.

The modern ARM processors such as the ARM9, ARM10 and Intel XScale families use ARM architecture version 4T or 5TE which remove the 26-bit backwards compatibility mode in favour of the new 16-bit 'Thumb' architecture extension. As a result RISC OS needs to run in full 32-bit mode on these processors and RISC OS applications need to be 26/32-bit neutral so that they behave the same in 26-bit and 32-bit modes.

32-bit OS for the Risc PC?

Some people have asked if they will be able to upgrade their Risc PC to run a 32-bit version of RISC OS. While it would be technically possible to produce a version of RISC OS for the Risc PC that used 32-bit mode it is unlikely to happen for several reasons.

Firstly, it would be an enormous undertaking and the effort is much better expended on developing new Intel XScale-based computers. Secondly it would require users to upgrade all of their software to 32-bit mode. More importantly, there would be little point. Programs running in 32-bit mode will run no faster on a Risc PC than they would in 26-bit mode. Nor is a 32-bit version of RISC OS needed to run new applications, because, as I've explained, they will work in 26-bit or 32-bit mode.

The real benefits of using 32-bit mode are

that it enables us to use fast, modern processors such as the Intel XScale, and this results in an enormous performance increase. In fact no new ARM processor has been designed with 26-bit support since the Strong ARM in 1995, so we need 32-bit support if we are to use a processor that is less than seven years old.

Writing neutral code

In order to write code that will behave the same in 26-bit and 32-bit modes certain code sequences must be avoided:

• Avoid instructions that include the PSR (the flag bits) in the PC when in a 26-bit mode, as they will behave differently in a 32-bit mode. For example, do not use:

```
ADD a1, a1, PC
```

Instead use:

```
ADD a1, PC, a1
```

This behaves the same in 26-bit and 32-bit modes by ignoring the PSR in both cases.

• LR (link register, r14) must contain the PSR flags on entry to all functions if the code is running in a 26-bit mode, so the following is illegal:

```
ADR LR, return; No PSR flags!
MOV PC, Rw
return
```

But this is legal:

```
MOV LR, PC
MOV PC, R2
return
```

• You must not use MOVS to return from a function in 32-bit mode:

```
MOVS PC, ...
```

This will not restore flags in the same way, in 32-bit exception mode it restores the CPSR from the SPSR for the current mode (this is unlikely to be useful though as the SPSR is subject to alteration by an interrupt routine unless IRQs have been disabled).

• Do not attempt to restore flags in an LDM instruction in 32-bit mode:

```
LDM {...,PC}^
```

• Function calls made with BL will not save the PSR. It is often easiest to change function calls to not require flag preservation. If flag preservation is required and the code is only intended for an ARM6 or later the CPSR can be saved and restored explicitly using MRS and MSR.

If ARM2/ARM3 compatibility is required then check the current processor mode and choose whether to use TEQP or MSR.

• Be aware that SWIs are no longer required to preserve flags.

• Avoid instructions like CMP PC, #&80000000 to set the V flag, this will not work if the program counter is above &80000000.

• To test whether you are in a 26-bit mode:

```
TEQ R0, R0      ; Set Z flag
TEQ PC, PC      ; Z set if in 32-bit mode
```

This works because the second operand to TEQ includes the flags in 26-bit mode, but not in 32-bit mode, whereas the first operand never includes the flags. We are therefore comparing PC with PC+PSR if in 26-bit mode, but comparing PC with PC in 32-bit mode.

This will set Z in 32-bit mode but not in 26-bit mode since we know at least one bit (the Z flag) is set in the PSR. Note that the first instruction can be omitted if a flag is known to be set (eg the V flag) or if not in user mode (since one of the mode flag bits will be set).

• Modules and AIF files must have the new '32-bit compatible' flag set in order to work on 32-bit systems.

• Use macros to manipulate the PSR wherever possible to minimise the complexity of entry and exit sequences in subroutines.

Memory Map

The memory map will change in RISC OS 5 to allow application slots larger than 28MBytes. As a result the RMA, screen memory, system heap, supervisor stack, 'Cursor/System/Sound' area and the ROM will all be moved to a high memory address (typically above &F0000000). Things to watch out for:

• Clearing bits &FC000003 bits from pointers.

• Doing signed comparison of addresses.

• Code which uses negative values to indicate a pointer is invalid.

• Using high-order bits of pointers as flags.

The last two points also affect some of RISC OS APIs, as explained below.

RISC OS APIs

Many RISC OS APIs (Application Program Interfaces), particularly in the WIMP, are documented as accepting a negative number or a number less than or equal to 0 to represent an invalid pointer. If a negative number is used it must be -1 now as other negative numbers will be interpreted as valid pointers (in particular, watch out for &80000000 being used). 0 may still be used where it is allowed in the current API definition.

Note that it is possible to test for 0 or -1 with the single instruction TEQ Rn,Rn,ASR#31 which will set the Z flag according to whether Rn contains 0 or -1.

Some APIs are defined to accept flags in the top bits of a register which also holds an address. This restricts the addressing range to 64MBytes and a new API is needed in RISC OS5.

For example, in RISC OS 3 and RISC OS 4, OS_ReadLine interprets R0 as a 26-bit address, with 6 flag bits, 4 currently unused. In RISC OS 5 OS_ReadLine now interprets R0 as a 32-bit address, and acts as though the flags are all clear. This reflects the most common usage, and allows applications not wanting to use the flags to remain unaltered.

A new SWI, OS_ReadLine32, takes its flags in R4. Bits 31 and 30 correspond to the original flags. Bits 29-8 are reserved and must be zero. Bits 7-0 are used as the echo byte (if bit 30 is set). As before, R4 is preserved by the call.

Other SWIs which will change include OS_SubstituteArgs, OS_HeapSort and OS_File as they all currently expect 26-bit pointers.

Full details of the API changes will appear soon on Castle's 32-bit Web site at www.iyonix.com/32bit

Dynamic Areas

Since applications will now be able to claim large amounts of memory for their application slot there is no need for them to use dynamic areas, except where data needs to be shared between multiple applications.

Excessive use of dynamic areas by applications is now discouraged and it is likely that you will be able to get more memory in your application slot than you will in a dynamic area.

Conclusion

This article should serve as a useful introduction to the issues of writing assembly code that is 26-bit/32-bit neutral, but serious developers should refer to the C/C++ documentation and the documentation on Castle's 32-bit web site at: www.iyonix.com/32bit

If writing a lot of assembler code it is recommended that you obtain the latest ARM Architecture Reference Manual (commonly referred to as the ARM ARM). It is available as a printed book from bookshops (around £32) or free of charge on CD from ARM. See www.iyonix.com/32bit for details.

The real benefits of using 32-bit will be seen when running familiar applications on the Iyonix PC, the speed difference is certainly impressive and makes the conversion work very worthwhile...

Paul Skirrow
support@castle.uk.co

Show goers

The RISC OS South East Show 2002 took place in Guildford on Saturday 2nd November 2002. As has been the case for the last few years, the line-up of show organisers changed yet again, and this time SASAUG alone took on the burden of organising the show, without involvement from ROUGOL or the ARM Club, but with the help of a few individuals from other user groups on the day itself.

The Castle Iyonix PC dominated the show, as the first announcement of the new computer had come only a week or two before. In fact, the venue chosen seemed to have been intended for a much smaller number of people than the announcement provoked, and there was chaos both in the parking areas and inside the venue.

I was therefore joined by a couple of other people in my established tendency to park in a questionable manner at RISC OS shows, and it was also the first time I have seen a "smart car" have trouble finding a parking space. Quite a few people had to make lengthy reversing manoeuvres to extract themselves from over-full parking areas, and it would have been useful for the show organisers to spend a little time directing people away from full car parks, rather than simply observing the situation with interest.

Inside the show itself, the unexpectedly high turnout was even more evident. While the Reading show of the previous year had been more crowded than might be comfortable, this show went one step further, with movement round the show usually difficult, and at times impossible.

Secret preparations

One of the most dramatic elements of the Iyonix PC release had been the secrecy with which it was surrounded, right up until the moments chosen by Castle for particular information to be released. Iyonix computers had been shipped to various developers in the RISC OS world nearly a month before the show, but everyone receiving an Iyonix was required to sign a Non-Disclosure Agreement (NDA) which included significant financial penalties for those releasing information without permission.

With a few minor exceptions, this approach seemed to work very well, particularly given the tendency in the RISC OS world for rumours of new developments to mushroom out of all proportion almost as soon as work begins.

Even at the show itself, the one developer who had brought along their Iyonix PC (the Aemulor project, on this occasion displaying their work on the Association of Acorn User Groups stand) seemed keen not to overstep the line. The computer itself was hidden beneath the table, albeit with occasional opportunities to inspect it, without a camera, to confirm that it was indeed running the screen display seen above the table. Equally, the rules seemed to preclude visitors operating the Iyonix PC themselves, although this restriction was relaxed a little towards the end of the show.

Despite all this secrecy, I was surprised that so many people seemed taken aback by Castle's announcement of such an advanced RISC OS computer. As long ago as the RISC OS South West Show 2001, Castle's Jack Lillingston had given some detailed insights into what would be required in a computer to replace the Risc PC, and specifically stated that work was already underway.

My report of Jack's comments at that show covered all of the most important features that subsequently appeared in the Iyonix, including the move to processors faster than the StrongARM (implying a fully 32-bit OS), and support for PCI and USB. Now it appears that Castle have finally reached their stated goal.

RISC OS 5 features

Because Pace's work to make RISC OS fully 32-bit took place some time ago, on versions of RISC OS 3, there has been some speculation as to what functionality the Iyonix's operating system will have apart from X-Scale compatibility. The official answer from Castle at the show was that the RISC OS 5 feature set is "broadly similar to that of RISC OS 4.02"; it wasn't suggested that RISC OS 5 had been developed directly from RISC OS 4.02, but it does contain all the key features that we're used to, such as long filename support.

RISC OS 5 doesn't currently have the new features that have been developed by RISCOS Ltd in the RISC OS Select scheme (versions of RISC OS between RISC OS 4.28 and RISC OS 4.33). There seems to have been a slight breakdown of communication, with Castle keen to get their 32-bit operating system to market as quickly as possible, without putting time aside for talking to RISCOS Ltd about including the latest features of the existing operating system.

The good news is that both parties seem keen for this divergence of development not to continue; Jack Lillingston said in answer to questions that Castle "would hope to converge" the features of RISC OS Select with RISC OS 5 on the Iyonix. Likewise, RISCOS Ltd have stated on the Select mailing list that they would like to bring RISC OS Select to the Iyonix, and can appreciate the reasons for Castle's approach.

While merging the two is likely to be a more complex job than preparing a release of Select for the MicroDigital Omega (which is also on RISCOS Ltd's list of plans), it does give hope for the future that both companies can work together to provide at least the most important Select features for RISC OS 5 computers.

Castle said quite specifically that there would be no version of RISC OS 5 for computers pre-dating the Iyonix, and it has been suggested that they do not intend RISC OS 5 to be available for any other computer. Since the most important benefit of RISC OS 5 is the ability to run RISC OS on processors faster than the StrongARM, Castle have



some justification in their approach: it's just business.

Graphics changes

Another significant element of RISC OS 5 is the introduction of video abstraction. This means that RISC OS is no longer dependent on the dated VIDC chip, allowing the Iyonix to use a modern PCI graphics card from the PC world for video output instead.

The graphics card chosen for the Iyonix is an nVidia Geforce 2 MX400. This can support up to 64MB of video memory (as against the maximum of a mere 2MB of VRAM on a Risc PC) however there was a suggestion that Castle might only be using 32MB in current versions.

In their presentations, Castle described the Iyonix as capable of 1920 by 1440 in 16 million colours, which provoked some concern among graphics enthusiasts and ViewFinder owners. However, it now appears that Castle's use of these figures was due largely to lack of any larger monitor at their premises. In answer to questions, it was confirmed that the graphics card being shipped was indeed capable of 2048 by 1536 in 16 million colours as an "absolute maximum".

Castle were asked at the show why the Iyonix uses PCI graphics but not AGP, a newer and faster standard which is now the norm in the PC world. The answer was firstly that the RISC OS desktop display is efficient enough that the additional graphics speed of AGP is entirely unnecessary; and secondly that the Intel XScale chip chosen has PCI support built in, but not AGP.

Castle are keen to move away from designs where key parts of the system rely on custom chips to provide extra facilities, leaving the manufacturer vulnerable to problems in chip design or production (one factor which contributed to the demise of Acorn's Phoebe). In addition, avoiding custom chips makes sure that the future manufacture or development of the computer is not at risk if there are problems with the supply of the chips in question.

Gigabit networking

As someone who needs fast networking technology all too frequently on other platforms, I was delighted to hear that the Iyonix will ship with gigabit ethernet capability as standard. This gives it ten times faster network access than the 100Mbit speeds which have been the best available under RISC OS so far.

Better still, the speed gain may in practice be even greater, as the existing 100Mbit cards are limited by the older architecture of existing RISC OS computers. The Iyonix can also communicate at 100Mbit/second or 10MBit/second if required, and it could still be worthwhile to plug in your Iyonix with a gigabit connection even if your other systems only have 100Mbit connections, if several of the other systems might need to transfer data to or from the Iyonix at the same time.

Even if it will be a little while before the average RISC OS user makes full use of gigabit ethernet, Jack Lillingston was certainly right in his comment that the inclusion of gigabit ethernet as standard helped to make sure that the Iyonix not only caught up with the latest technology standards in the PC arena, but in some cases exceeded them. A gigabit network card usually isn't hugely expensive as an add-on for PC systems, but few ship with one as standard.

Expansion and peripherals

Although Castle have opted for only four PCI slots, the fact that both sound and networking are integrated into the Iyonix motherboard (and thus do not use up extra PCI slots) is a significant advantage. This means that, with USB taking up one of the 32-bit PCI slots, and the graphics card taking up one of the 64-bit PCI slots, you're still left with one 64-bit and one 32-bit slot free.

The two podule slots are in addition to this, although at the present time it's still not very clear what the ordinary user will be able to plug into them. Personally I would want a SCSI interface, but for fast SCSI hard disks an interface fitting into the spare 64-bit PCI slot would give vastly superior performance. It has been suggested that Partis computing will be developing a PCI SCSI card for the Iyonix, which is good news; but there weren't any hints as to which cards from the wide range of existing podules worked on Iyonix already, or would be made to work.

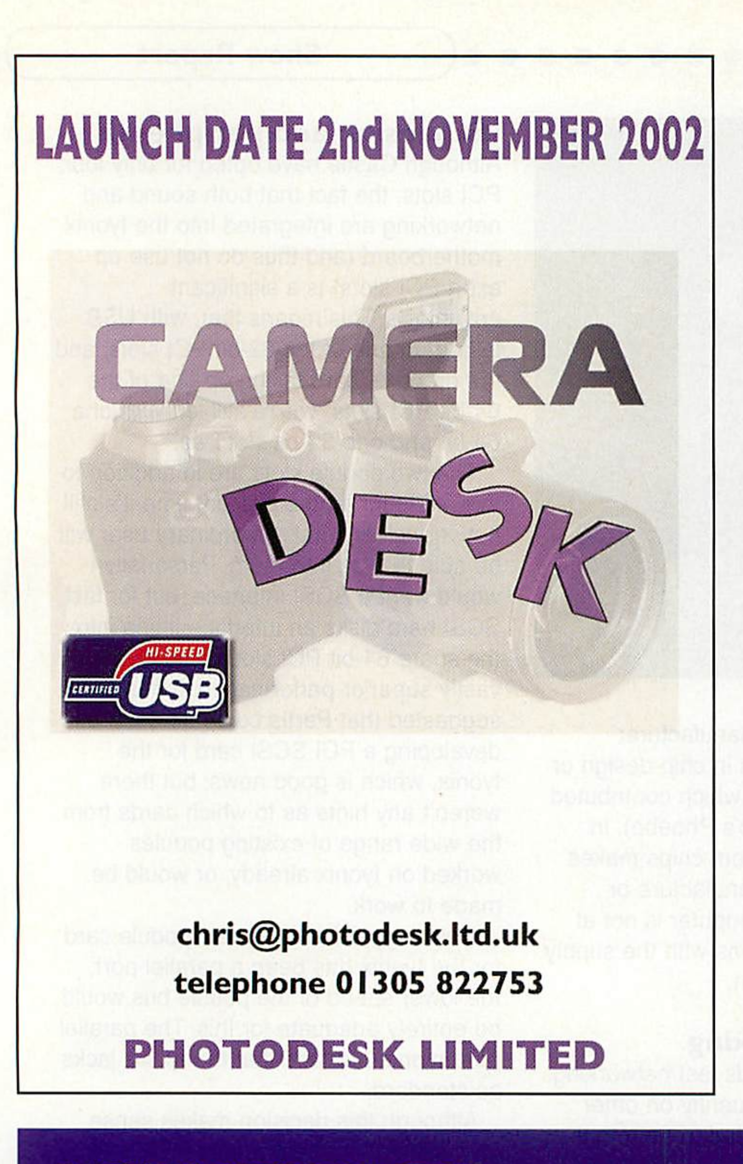
One suggestion for a new podule card for the Iyonix has been a parallel port, the lower speed of the podule bus would be entirely adequate for this. The parallel port is one interface that the Iyonix lacks as standard.

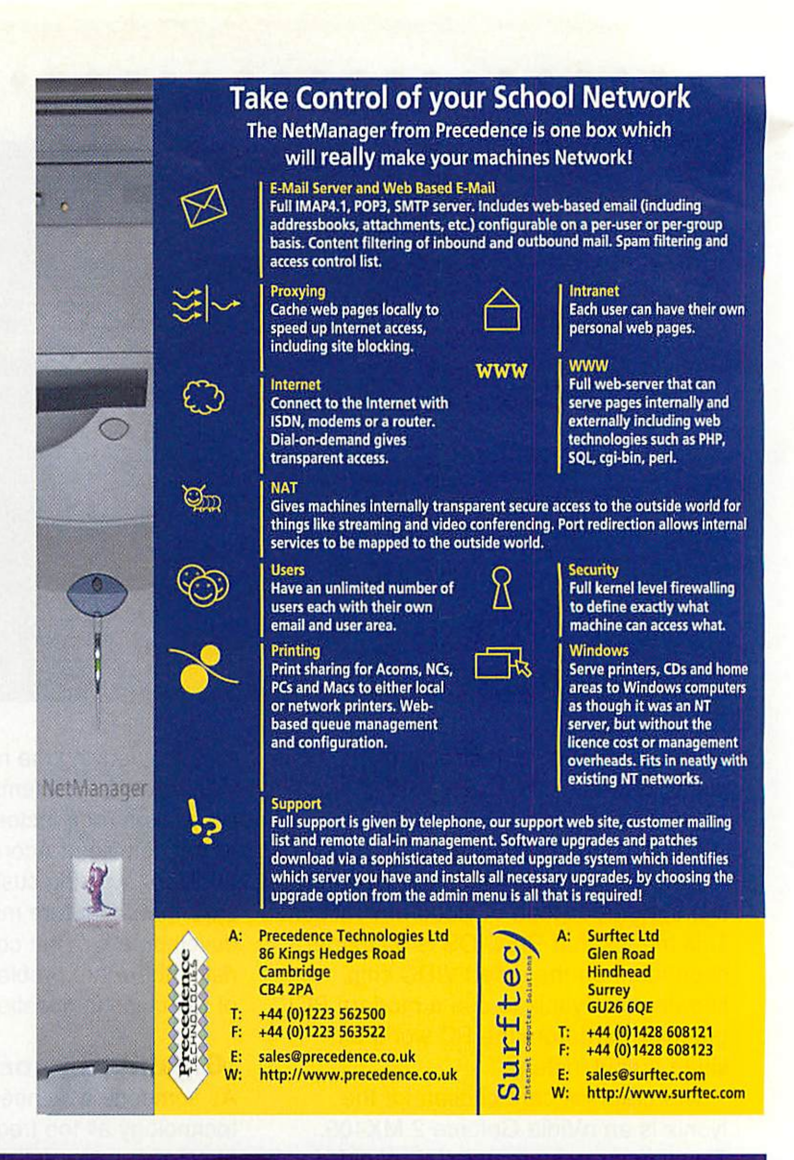
Although this decision makes sense, as almost all modern printers rely mainly on USB rather than parallel for connectivity, it could prove a minor annoyance to some users who, like myself, have made long term investments in older (but more expensive) printers where parallel is the preferred choice of connection. It is worth noting that USB to parallel converters are available in the PC world, so it's not yet clear what the best solution for parallel port printing will be.

Going back to the USB implementation itself, Castle said that the USB PCI card used in the Iyonix was capable of USB 2.0, but it wasn't yet decided whether the system would ship with RISC OS drivers for USB 2.0 rather than merely USB 1. Either way, the presence of support for USB 2 in the hardware is good news, especially for some of the USB developments I will mention later.

Run silent

The RISC OS world has long made much of the ability of ARM processors to provide significant processing power while generating very little heat. All too often, the response has been "so what?" in a desktop computer, the advantage of not needing a fan (or several fans) to cool the processor is made irrelevant by the noisy fans required to cool all the


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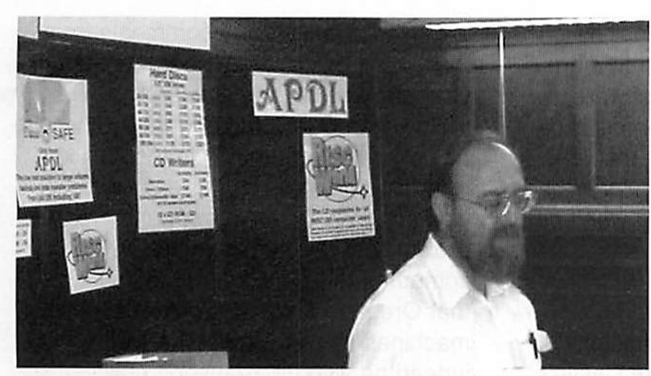
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other components.

Castle have now put some serious thought into this, and the Iyonix will ship with only one fan, housed in its 250W PSU that features a "silent mode" whereby the fan will run at a much lower speed whenever the temperature inside the case is within reasonable limits. Jack suggested that the higher (noisier) fan speed would only kick in when ambient temperature reached 35 centigrade or so, which should be pretty rare in Western Europe.

Castle have also made a deliberate choice of a very quiet hard disk for the Iyonix's standard configuration, thereby alleviating the other most significant source of noise in desktop computers. The hard disk in question still manages a respectable 32MB/second (we're told), which is 16 times the speed of the standard Risc PC IDE interface, and 4 times the speed of the fastest disk interfaces that can be fitted to the Risc PC.

Software emulation...

With a processor that requires 32-bit compatible software, Castle have the challenge of making sure that there is a sufficient selection of usable software that purchasers will be able to use their new machine to its maximum. There are just two key factors in deciding that; firstly, how much RISC OS software can be made ready to run in fully 32-bit mode, and secondly, how much of the remainder can be made to run under sufficiently fast emulation?

Talking to Neil Spellings and Adrian Lees, the people behind Aemulor, some answers quickly emerged. Their list of software already running under the Aemulor emulator included Artworks, Impression Style and Publisher, Personal Accounts, and WordWorks.

StrongEd appeared on the list of software working under emulation, although Adrian commented that he uses Zap for some things and StrongEd for others, so will be sure to get both working under the emulator; but said he expected that proper fully 32-bit versions of these two applications would be released soon enough, and emulation wouldn't be necessary from that point on.

Whilst I was interrogating Neil and Adrian, Chris Hornby of PhotoDesk Ltd seized a spare moment to walk across from his stand just opposite the Aemulor display. Never one to beat about the bush, he asked, "Does Photodesk work on it?" Neil looked him in the eye and said with total certainty, "It will". Such is the confidence and commitment behind the Aemulor project, and I have little doubt that Photodesk will already be running on a least one Iyonix by the time you read this.

Nothing is ever entirely simple, though, and Adrian admitted that although Impression had been working under Aemulor the previous week, some changes either in Aemulor or in the latest release from Castle had caused it to stop working a few days before the show. A quick fix was promised.

I established that software not yet tried using Aemulor included Datapower, Prophet, the ANT Suite, Pluto and Sibelius (the latter was described as likely to be "tricky to get working under emulation"). What had and hadn't been tried was mostly dependent on which packages the Aemulor team already owned themselves, so it's worth noting the stated aim of the Aemulor is to get working "all the major apps that people use". If you haven't already told them of an application that you would like to see working on the Iyonix, now is the time!

Neil suggested that Aemulor might cost roughly £50 when released, but a demo version would ship with every Iyonix. This might seem the wrong way round, at least some people will want to know what software works under emulation before buying the computer, not after, but comprehensive information on what applications pass and fail was promised for the Aemulor Web site.

Speed of emulation

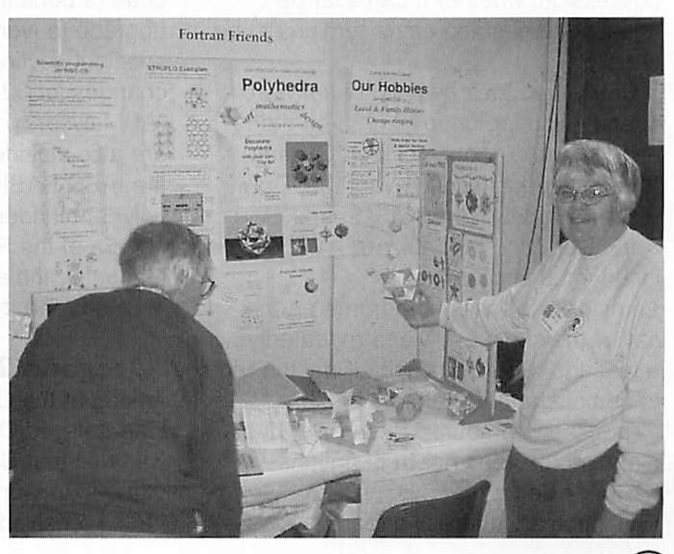
Software emulation is of course slower than running software on the hardware and operating system for which it was designed. Some basic Artworks speed tests, carried out by myself with the co-operation of the Aemulor team and others, indicated that the speed of Artworks under emulation was much closer to that of the same software running on an ARM610 or ARM710 Risc PC, than the StrongARM Risc PC performance suggested by some.

Having said that, it should be emphasised that Aemulor is still a product under constant development, and can be tailored to provide the best possible speed-ups with individual applications. The Aemulor team said their aim was for the 600MHz Iyonix to run emulated software at roughly the speed of a StrongARM Risc PC.

For those who weren't at the show, it's also worth pointing out that, although Aemulor is a form of software emulation, the end result is nothing like the old software PC emulator with which most of us are familiar. Applications run using Aemulor appear within the main RISC OS desktop, not in a separate window with an additional speed penalty as was the case with emulation of DOS software.

Emulation and reality

There is even more to the emulation tale, however. Because some parts of an application can be fully 32-bit compatible while others still require 26-bit execution, Aemulor need only provide emulation for the 26-bit sections. A good example is our Artworks speed test. It only needs Computer Concepts' core GDraw module to be made 32-bit compatible (as it already was by the time I wrote this), and our benchmark becomes meaningless, as the redraw code will execute at full speed, and only the less time critical (but much more substantial) parts of the application still need be run



under emulation.

Conveniently and perhaps not entirely coincidentally, Martin Wuerthner occupied the stand next to Aemulor, with the latest variants of MasterWorks (the new name for Artworks, the initials aren't entirely coincidental either). Talk of emulation came to an end as he promised a fully 32-bit version of !AWRender before January 2003, and raised the possibility of a fully 32-bit version of Artworks itself sometime after that, if the necessary information could be obtained from Computer Concepts, no guarantees were made as to whether the possibility would become reality.

The key to making full use of the Iyonix's speed must be in fully 32-bit applications rather than emulated ones, and more good news was not hard to find. Andrew Conroy confirmed that a fully 32-bit version of the Impact database was on the way from 4th Dimension, and said that at least some of the rest of the substantial 4th Dimension catalogue may reach that goal too.

R-Comp were equally up-beat about the rise of the X-Scale, telling your correspondent that all R-Comp software would be made 32-bit compatible, with the exception of a few of the older games. Rather less positive was Dave Holden, who declined to comment when asked which of the APDL, iSV or ProAction titles were, or would ever be, fully 32-bit.

Paul Vigay said that 32-bit versions of ANTUtils and NeXTbar were already available, and promised that all his numerous software titles, sold under the Digital Phenomena label, would be converted in due course. A fully 32-bit version of Fresco exists and is in Paul's possession; whether it can ever be released to desktop users remains to be seen.

Castle had their own list of software already working happily in 32-bit mode on the Iyonix, and it included Ovation Pro, Fireworkz, Cerilica Vantage, Draw, Paint, Edit, !PDF, InterGIF, SparkFS, AmPlayer, Kino, and (bizarrely) Zool. The last-named succumbed to Aemulor/Impression syndrome on the day of the show itself, and repeatedly refused to run when Jack Lillingston tried to demonstrate it. Spheres of Chaos 2 is also reliably rumoured to be fully 32-bit, although I haven't heard of anyone having tested it on an Iyonix.

In summary, there is already a substantial selection of software which works natively on the Iyonix; but more importantly, just about any software which is still actively developed is likely to be made fully 32-bit within the very near future. Where items of older software are still essential but won't be converted, Aemulor steps in.

32-bit development

In his presentation, Jack Lillingston spent some time talking about Castle's new development suite and the process of converting software for full 32-bit compatibility. He emphasised that code written entirely in BBC BASIC should need no alteration at all, code written in C or C++ should usually only need re-compiling, and even assembler code requires "not a huge amount of work", although the precise definition of "huge" wasn't mentioned! In addition, Jack reminded the audience that software recompiled to be fully 32-bit would still work on RISC OS 3 and RISC OS 4.



Castle's development suite also contains some major bugfixes compared with the Acorn version, as well as speed increases of up to 10% for the compiled code (a benefit even for those who don't upgrade to Iyonix!) Two utilities to spotlight sections of code requiring changes for 32-bit compatibility (ARMalyser by David Ruck and !SID), are also included, and a new version of the !ABC BASIC compiler that produces fully 32-bit code, plus volumes 1 to 4 and 5a of the Programmer's Reference Manuals (and an updated version of !PDF to read them with).

Oregano 2 soon?

Asking at the Castle stand about the long-delayed Oregano 2 Web browser, I was told that Castle had originally planned to launch it at the show, but still hadn't received a final version. This provoked a few cynical comments from those who had already been waiting for Oregano 2 for a long time.

However, Castle hinted that they would be very reluctant to launch the Iyonix without Oregano 2 being ready and working on it. Given the apparent proximity of the formal launch of the computer, this would seem to indicate that Oregano 2, for other recent machines as well as just the Iyonix, will indeed be with us "real soon now".

Although Castle were still cautious about what they were prepared to reveal about the Iyonix, some staff at their stand seemed defensive even when asked questions that had already been answered by Jack Lillingston in his presentation, the overall impression given was one of great confidence in their product, and an ease in presenting to the public that we haven't always seen from other developers.

This was particularly evident in the presentations given by Castle in the show theatre. Two of these were run rather than one because of heavy demand, and a third would have been welcomed by some. Jack used an Iyonix to play music as the audience took their seats, and to present a series of slides using a fully 32-bit version of Photodesk Ltd's OHP2; then he handed over to Mike Glover of Icon Technology, who demonstrated the 32-bit version of TechWriter to show off the impressive speed of the Iyonix.

Mike did manage to crash the Iyonix during the first presentation, however this was received with good humour both by the presenters and by the audience. Jack was even happy to poke fun at some of Castle's setbacks, pointing out the delayed Oregano 2 Web browser among the list of 32-bit native applications and commenting "not sure how that got in there".

The audience did manage to come up with some questions that obviously covered slightly awkward ground, in particular, the question of whether and when RISC OS Select features might appear for the Iyonix, as mentioned above. But even such potentially controversial questions, while not perhaps entirely welcome, didn't seem to be unexpected; and they received coherent answers, even if not definitive ones.

Everyone watched the presentation with great care to get an idea of the speed of the Iyonix in use, and it was Mike Glover who gave the best idea of this with his TechWriter demonstration.

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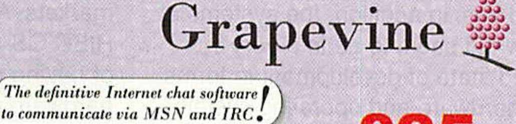
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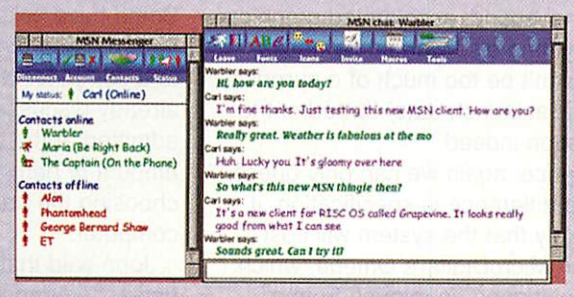
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TechWriter opened the 24MB Easiwriter manual instantly, and ARM Holdings' entire annual report (in Word format) in less than a second.

An issue of the Mathematical Gazette (itself produced in TechWriter) provided further opportunity for demonstrating extremely fast loading, manipulation and redraw speeds, and I can honestly say that the presentation left the audience gobsmacked by the speed of the computer, quite apart from Jack's equally impressive statistical comparisons between StrongARM Risc PC and Iyonix which included opening a large Ovation Pro document at more than four times the speed of the slower computer.

TechWriter, an old hand

I took an opportunity to talk to Mike Glover in person, and he pointed out that the fully 32-bit TechWriter was nothing especially new, as TechWriter was celebrating its second birthday as a fully 32-bit application. Listening to Mike's personal viewpoint at the Wakefield 2002 show, there had been a suggestion of ongoing problems with the future development of TechWriter and EasiWriter, so I was keen to discover how things stood now.

I was reassured that, although Mike pointed out the difficulty of anyone stepping into the shoes of the late Bob Pollard, it was revealed that work on the Writer family was now progressing, with another programmer taking over the reins to continue development. Mike also admitted that Icon Technology didn't (yet!) have an Iyonix.

Mike gave some insights into how the friendly RISC OS developer community can and do help each other out. Techwriter relies on ImageFS to render Windows Meta Files (WMF), which are increasingly popular in the Windows and even RISC OS worlds. Sadly, no 32-bit version of ImageFS is available, and so David Pilling has developed an alternative WMF renderer, which is 32-bit and can also be used within TechWriter and Easiwriter. Problem solved.

Finally, I pressed Mike on the question of cost of upgrade to the 32-bit version of TechWriter. He emphasised that final pricing had not yet been decided, but suggested that the upgrade for owners of the latest version might be around twenty pounds.

No date, no price

The two key areas where Castle were determined to maintain secrecy were the projected launch date of the machine to ordinary customers, and the planned price. Asked about the launch date, Jack commented wryly that "our soon is quite soon... very soon", presumably a humorous reference to the problems suffered by other RISC OS hardware developers, but would say no more.

Iyonix systems will have been in the hands of various developers outside Castle for over two months by the time you read this. In addition, the systems at the show did seem to be in a very advanced state of development in terms of both hardware and operating system. Just about the only Iyonix functionality I didn't see demonstrated at the show was networking; sound, accelerated graphics and everything else worked flawlessly. So it wouldn't be too much of a surprise if the "official launch date" turned out to be very soon indeed.

As for price, again we can only guess. Given the difference in specification, it seems likely that the system will cost more than MicroDigital's Omega, which has recently gone up in price from a thousand pounds plus VAT to about 150 pounds more. Equally, the original Risc PC systems cost over 1500 pounds plus VAT for any decent specification. On the other hand, prices of Windows systems have fallen a great deal in the intervening years; so although Castle would never consider competing with ordinary desktop PCs on price, it is possible that the Iyonix may end up being more affordable than some may expect.

Market expansion

When writing about MicroDigital's Omega presentations, I noted the stated intent to sell the Omega into markets beyond the existing RISC OS enthusiast customer base, including ordinary desktop users as well as niche markets. Castle say they have similar plans; they already sell significant quantities of RISC OS computers for broadcast television, radar systems and similar uses, and at least some of these customers use custom developed podules, which almost certainly helped justify the decision to equip the Iyonix with podule slots as well as PCI expansion.

Likewise, Castle seem eager to expand the desktop usage of their systems too. Asked if the existing RISC OS enthusiast market was too small a niche for several competing hardware manufacturers to survive, Castle's John Ballance said that in his view, it might even be viewed as too small a niche to be entirely comfortable for just one!

The obvious conclusion is a desire to sell the Iyonix wider than just to the current RISC OS enthusiast market and Castle's existing specialist customers. What form an approach to the wider market would take remains to be seen, but it's once again true to say that new RISC OS hardware means new approaches to different markets, and presumably even some advertising money to sell RISC OS into those markets. All of this can only be good for RISC OS users, even beyond the benefit of having brand new much faster hardware available.

What's in a name?

Some have asked "what does Iyonix mean?", and the answer is that it refers to a computer with the capabilities already discussed. But John Ballance admitted at the show that a certain amount of hard work had gone into choosing the name for Castle's new computer.

John said that, before the name was unleashed upon the world by the boys from Framlingham, search engines only found one reference to it anywhere upon the Internet, and in an unrelated field. There are clear advantages here in establishing a distinctive product identity, although there is already some dispute over exactly how to pronounce the name.

Iyonix and Omega

MicroDigital did not attend the show, although I was told they had seriously considered doing so. One of their resellers said that Omega computers had not yet been sent out even to developers or resellers at the time of the show, although at the time of writing it appears that MicroDigital Europe do indeed have working Omega systems in continental Europe.

It's therefore difficult to draw conclusions on the question I have been asked a number of times, "which is better?" Castle seem to have stolen the limelight, and perhaps more, by going straight for a fully 32-bit operating system and a much faster processor as the main CPU. The most recent information is that MicroDigital plan to use a 306MHz CPU, as against 600MHz for the Iyonix.

In addition, the more recent design of the Iyonix has allowed Castle to take advantage of modern technologies, with a significant speed increase over the Omega in almost every area, PCI, memory bus, disk access, a recent PC graphics card. Castle's use of the nVidia card's 2D acceleration facilities was very evident at Guildford, whereas the most

recent public demonstration of the Omega lacked the use of 2D acceleration, and thus drew some criticism for sluggish redraw speeds. Neither party have yet demonstrated 3D acceleration in action, but this may be most significant only for games software.

On the other hand, MicroDigital's computer does still seem likely to give faster performance for applications where the majority of the most important code will never be 32-bit compatible, the most important example is Impression. For those who spend most of their time using such applications, it should prove the better choice. The extent to which this remains true also depends on how close the Aemulor team come to their promise of StrongARM speed for emulated applications.

For some people, the balance of choice still rests upon which manufacturer can produce a fully working production machine soonest. Castle seemed to have pulled ahead here, with all key features demonstrated and early systems already shipped to developers, but it wasn't yet clear at the time of writing how the actual release schedules would compare; nor indeed when or whether MicroDigital's promised additional processors for the Omega will appear.

As mentioned above, the pricing of the two systems is also likely to differ. The Omega may end up perfectly placed to appeal to those with slightly more limited budgets who may not wish to buy many software upgrades or move to a different software package; whilst the Iyonix could be the choice of those who are happy to upgrade their software or use emulated applications, in return for much faster performance overall.

USB everywhere

PhotoDesk Ltd were also demonstrating USB connectivity, in this case, a direct to camera link from a Risc PC to a digital camera. Chris was kind enough to lend me the camera in order to take some pictures of the show, after my own camera had to be sent off to the Casio repair shop. One thing I learnt was that PhotoDesk Ltd are well able to supply compact digital cameras simple enough even for your technology-challenged correspondent, as well as the sophisticated high quality cameras which are their specific area of expertise.

At the Castle stand, we saw a Risc PC using Castle's USB interface to connect to scanners from Epson and several other manufacturers.

Despite all these new things on the way, I was a little disappointed by the gradual nature of the release of RISC OS drivers for USB peripherals. When I reported on the Wakefield Show for Acorn User, USB news was all the rage, with some developers taking away USB hardware at the show itself, while others had received the hardware some time before the show, and PhotoDesk Ltd were able to demonstrate download from a digital camera to a Risc PC using USB, albeit in a very early form.

I was therefore somewhat surprised that, five months after the Wakefield Show, although plans for USB drivers have expanded to cover a wider range of peripherals, the selection of products ready for ordinary users to buy and walk away still seemed very limited. Photodesk Ltd and Surftec, in many senses the two champions of USB software drivers, both told me that their most important USB products had been delayed slightly and would hopefully be available at December's Birmingham show. Although USB connectivity is definitely established as the way forward, I had expected some more concrete results rather sooner.

New software?

Overall, it was tempting to take this cynical view of the show, and new software releases on the day were relatively few. I shall mention a few of the releases and the not-quite-releases, with apologies to anyone I've missed out.

R-Comp were advertising their "Universal Network Printer Driver", which allows printing from RISC OS even where a suitable driver does not exist, to be handled at the Windows end by Windows' huge range of printer drivers.

Martin Wuerthner, whose plans for 32-bit software I've mentioned already, had even more plans for MasterWorks/Artworks. The AWRender application, important to anyone rendering Artworks files in Impression or any other package, now displays deep colour sprites, as well as displaying other sprites correctly in deep colour modes; it can also render "TextArea" objects.

Ready long before you read this should be SVG export, thus giving RISC OS graphic designers the chance to export graphics in a vector format understood by all Windows web browsers; the Artworks/Masterworks SVG export facility automatically converts embedded sprite files into PNG files, so they can be rendered on almost all browsers on other platforms.

Fortran Friends

The show gave me the chance to catch up with Fortran Friends, who had been concerned by their omission from previous show reports in both Acorn User and other magazines. Fortran Friends are a regular exhibitor at almost all RISC OS shows, and the vast range of software and advice available is perhaps enough to confuse even the most determined reporter!

On this occasion, they mentioned their entirely free Fortran graphics library for RISC OS (in their words, this gives RISC OS computers the capability of a professional graphics workstation), as well as their polyhedra software that can be both fun and educational.

Fortran Friends also seemed to have demonstrations and contact details for just about every single bell-ringing application ever produced for RISC OS. While this may not immediately appeal to all RISC OS users, it was certainly very visual and very impressive.

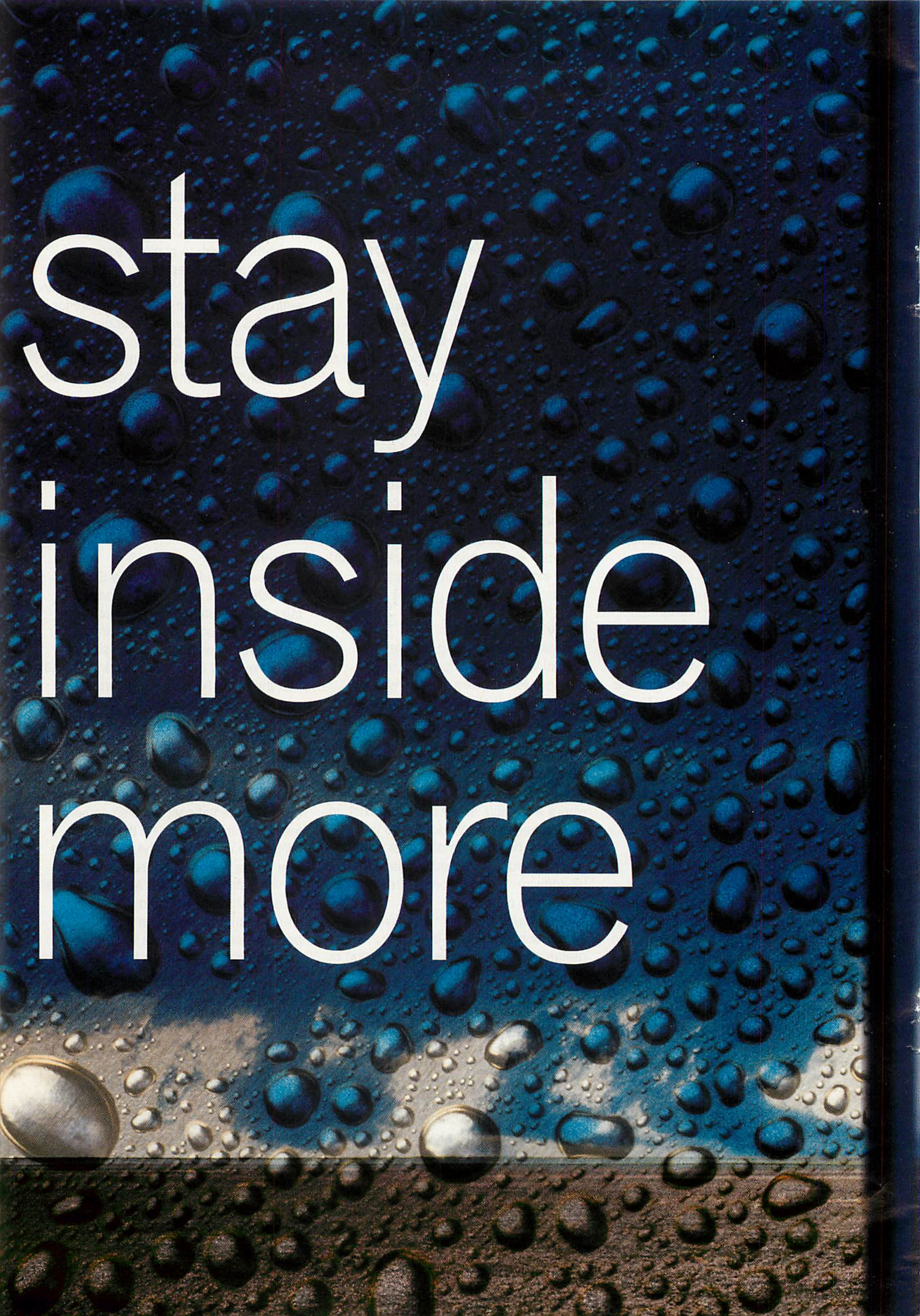
Moving on

The overall feedback from the South East show was very positive indeed. I talked to several of the organisers towards the end of the show, unusually, exhibitors showed no eagerness to depart even at closing time, and they felt that the show had been a spectacular success, although they also saw that there were some lessons to be learnt.

I was particularly impressed by some of the audio visual facilities set up by the show organisers, incorporating not just widescreen projection of the presenters during presentations, but also camera feeds into the screens so that Jack Lillingston could show the audience the rear of the Iyonix "up close" even while he was talking about it. The several other screens scattered around the show weren't quite so useful as might have been expected, but still a welcome innovation. Sound for the theatre audiences was faultless, or adjusted as necessary when required.

Talking to exhibitors about their viewpoint of the show, all those who had time to answer questions were delighted by how the day had gone. Even if there were a few minor flaws, the success of the show was a credit to Tommy Lowe's skills in arranging a venue, and all of those involved in the show for organising and running such a successful event.

dgs
dgs@argonet.co.uk
Iyonix rear case photo by Steve Potts, Wakefield RISC OS Computer Club


stay
inside
more

Catching the useful virus

I came to write this article because I have an inquisitive nature and I became irritated by a term that kept on cropping up when I was investigating web marketing and web marketing companies: Viral Marketing.

It's a buzzword, of course, but it has to mean something and it probably doesn't mean someone who promotes viruses. Well not quite, it actually means someone who promotes using a virus-like strategy. Apparently there have been efforts to change the term, after all who really wants to be known as a Viral Marketeer? But all to no avail, the name has stuck. So what is it?

Investigation into this subject followed my investigation into the Google Adwords for advertising purposes, in fact since I wrote the article Google have changed their Adwords system which now includes a basic £5 registration fee but you do now have a lot more control over how your money is spent.

But that's not the subject of this article, I may return to Adwords another day. You may recall that the reason for using the search engine advertising was to promote a Web site called "The Wordsmith". It was an interesting experiment but one thing that did happen was that although plenty of hits were generated while the advertising was running, after the allocated £35 was used up, the hits ceased.

You have to keep advertising to keep the hit rate up but if you are not making back the money you are putting in then you are not running a successful commercial Web site. Very simple.

So another method was needed and, as I said, this term "viral marketing" just kept on cropping up. I eventually decided to find out what it meant and did a Web search on it. I turned up a lot of Web Marketeers claiming to provide it as a service but finally found three articles which actually explained what it was all about.

It is a well-known fact that the best form of advertising is word-of-mouth. Someone recommends a service or product to someone else, that person is trusted therefore the second person tries it out. Meanwhile the first person has told a third, and a fourth, and a fifth and so on.

Not everyone of these people is going to buy the service or product but plenty of them will and hopefully they too will like the service or product enough to go away and recommend it to yet more people. If you have a good product this can spiral upwards very rapidly and you become an overnight success.

A simple story

Once upon a time there were three geeks who were really interested in providing online databases as a service to corporate clients. But they needed money and so did a presentation of what they could do to a group of venture capitalists.

The VCs were not impressed, in fact they had no interest. They could not see how they could make any useful amounts of money out of it. So at the end of the presentation one of the VCs said "Have you got any other ideas?". One of the geeks went "Well..." and explained his idea for providing completely free e-mail services. The VCs suddenly got very interested and backed the idea.

It may seem strange, they wouldn't back an idea that at least had a saleable product, but would back one that didn't, something that was free. But wait, dear reader, all will become clear.

The new service was set up, and its name was Hotmail. You may have heard of it. Hotmail was designed so that when a person sent an e-mail it had, tagged on the bottom, a little line that recommended the recipient also got their own, free Hotmail account. And the idea blossomed, people did.

The story goes that, using the registration details, you could see, for example, one person sign up in Sweden then you would get a few more and then suddenly an explosion. This is viral marketing.

Quite simply it is getting other people to do the marketing for you, it is word-of-mouth on the Internet.

Going back to Hotmail, at its peak it was getting over a million new registrations every month, it had exponential growth. But there was still no money involved where did the investors, and the founders, getting their money? They didn't. What the company had was the demographic and contact information of everyone of their registrants. Millions of them, and that is very very valuable in marketing terms. Hotmail was eventually bought by AOL for $300 million.

Key elements

It has to be said that getting something as simple and clean as the Hotmail phenomenon is very unlikely. It was a special case, it was the perfect product for viral marketing because no action was required by the registrant to get them to communicate the message to their friends and contacts.

However it is possible to isolate what needs to be done to achieve a level of viral marketing.

The first thing to realise is that in viral marketing you are not looking at the instantaneous result, it takes a while to build up to a level of effect where you can start to make money. But let us look at the Wordsmith site to see how it can, theoretically at least, be made to work. The points given here are also expounded by Ralph Wilson at **www.wilsonweb.com** and his site is well worth a visit.

1: The "free" word

You have to get people to come and look at your site. There has to be some sort of an incentive, having something that is free is always a good option. You can have free software, free images, free baseball hats, free anything it just has to be easy for the person to come along and pick it up.

I looked at the Wordsmith site and realised that there is something free there: Poems. A whole collection of free poetry. So what can you do with that? Obvious, you set it up so a person can mail a poem that they like to a friend.

When they do this they have to enter their name and e-mail address, the name and e-mail address of the intended recipient, a subject for the e-mail and a message. Plus we give them a tick box giving them the opportunity to subscribe to a newsletter.

If they leave the box ticked their details are recorded and can be used for promotion later. The product of the Wordsmith site is commissioned poetry, they have indicated that they like the poetry by sending someone a freebie, that makes them a good prospect for being sold a poem in future.

The decision to do this resulted in radical changes to the site, the home page was re-built to promote the free poetry pages. The entire site was re-written and programmed in PHP otherwise it would be virtually impossible to do this trick with messages, poems and e-mails.

There is a point of honesty here as well: If the newsletter box is not ticked the site does not record the person's details. All it does is record that a poem has been sent. It also became important to include a Privacy statement basically saying that if a person does provide their details that information will never be disclosed to a third party for any reason.

2: Easy to use

It is critically important that it must be easy for a person to communicate the message about the Web site. Arguably the Wordsmith site is a bit too complicated with too much to fill in, we shall see. Of course Hotmail had the perfect answer to this point, as it required zero effort to get the users to promote the service, infact they couldn't avoid it.

3: Cope with growth

You start small, if you are successful you get large. The system must be able to cope with a high level of growth. This was a potential weakness of Hotmail, you have to have mailservers and that means hardware. If the growth in registrants outstrips the mailservers and speed of installation you lose custom and break the cycle by giving yourself a bad name.

In the case of the Wordsmith it should be able to cope on the freebie side, unless the success is so great that it puts too much demand on the servers doing the hosting. It

could happen however with such a site it would be relatively easy to transfer to a hosting service with higher bandwidth. The actual poetry writing side could become overloaded, but that would be a nice problem to have.

4: Uses common behaviour

For a viral marketing campaign to be successful it needs to utilize normal human behaviour. To spread the word the site must encourage a person to do something that it is normal for them to do. There are dozens of human motivations you could tap into: greed is one (why do you think get-rich-quick schemes abound on the 'Net?); Wanting to be loved or merely liked is another.

The promotional activity that you want the person to engage in must tie in. For the Wordsmith the most likely desire is the latter, people think of poetry when they are in love and want to communicate that, or if they have lost love and so on. That was the most successful advert in the Google Adwords. Only a selection of poems in the free collection communicate that message and it is not easy to find them.

Clearly that means that Point 2 is not being fully obeyed so a categorisation and search facility should be implemented (and may be by the time you read this) and more poems along that line need to written and placed there. It is cold and calculating, but this is business.

5: Uses existing comm lines

Following on from Point 4 the marketing must go along existing communication routes, having established the motivation it is fairly clear that there must a communication line for the marketing to travel along.

Here is another point where the Wordsmith potentially falls down, but with some work could pick up again. Do people actually want to e-mail their love? Perhaps they do but then again perhaps they would rather print out a message and present it as a gift in hardcopy.

The Wordsmith site could be extended and made more interactive allowing the visitor to actually build a page containing the poem and some graphics with a personal message at the bottom. Then have this printed out so they can give it to the object of their desire (or whatever).

It is this type of thing you really need to think about when you are looking at how to do viral marketing for your site and your products.

6: Uses others' resources

Finally whatever system you use the message must be carried by other people's resources, their e-mails, their Web sites, their printer ink and so on. You just give it away so that they carry your message for you.

And that's why it is called viral marketing.

Kick start

There is, however, one final element to the viral marketing campaign that has not been mentioned. You can build the best viral marketing site in the world but if no one knows it is there how are they going to spread the word for you?

This is the chicken and egg situation. How in the world do you get the site kick-started and up to the break-even point where more people are spreading the word for you than you lose.

It's like a nuclear fission bomb, you have to reach that critical mass so that the enough neutrons are hitting nuclei that they generate enough new neutrons to keep the chain reaction going.

I have already mentioned Google Adwords, that is one way of doing it but it costs money. Writing an article in a magazine would be another way of reaching enough people to get them to look. You could spam the newsgroups not that I would recommend it you are quite likely to get your site closed down.

But given the right site, the right freebies and the right kick-start you could be on to a winner. I leave it as an exercise for the reader to see how this could be applied to RISC OS, I know what I would do, how about you?

Steve Turnbull
stevet@acornuser.com

Operating System review

In this issue we will take a look at the basic prgramming features of the two rival operating systems with the beginnings of a look user features.

Pre-Windows PC systems came supplied with a BASIC programming language called GWBASIC. Somewhere along the line QBASIC (Quick Basic) was installed instead, and nowadays no BASIC language seems to be included as standard. QBASIC is a DOS-based (text-only) language and is as near to BBC Basic V (as supplied as standard on RISC OS hardware) as the PC gets to the old BBC Basic emulator. PCs do have a very well-known "WIMP BASIC" called Visual Basic included in the 'Visual Studio' Suite of programming languages for an additional cost.

On RISC OS you can go into BASIC like the old BBC Micro by pressing F12 to get to the command line, or press Control+F12 to get a task window with a command line, and type BASIC. You'll be presented with something like this:

```
ARM BBC BASIC V Version 1.05 (C)
Acorn 1989
Starting with 651516 bytes free
>
```

From there on the BBC Micro style of programming is in action. Type in your line numbers and program code, alternatively write your code in Edit, without line numbers, save and run.

BBC Basic is an extremely powerful dialect of the language with very strong parallels with the computer language Pascal. It's ability to be written without any line numbers, with procedures and functions that have parameters, put it way beyond the simple Basics that exist or have existed on other machines. And it comes with the machine.

Unlike a PC it is very easy to to create an application written in BBC Basic that works smoothly with the operating system. In fact many applications are written in Basic and do not suffer because of it. Usually, with speed critical code, it is possible to smoothly integrate the Basic and machine code. It is also very easy to access module routines from Basic and get the returned results.

This is not to say that BBC Basic couldn't be improved: having the ability to install code libraries that could be used by any loaded Basic program and having CLASS definitions to allow object-oriented programming would shoot BBC Basic into a whole new range. Perhaps for BBC Basic VI?

The vogue development language on Acorn machines is Acorn C/C++, now updated for the 32-bit RISC OS 5. This is at additional cost and is not supplied with the machine.

File attributes

Moving on let'sÊlook at the way files are stored on disc and how they can be accessed, or undesirable access prevented.

Windows allows the following file attributes:

- R Read Only, file cannot be amended
- A Archive, file can be archived
- S System file attribute, these are operating system files typically MSDOS.sys and command.com on a DOS system.
- H Hidden (file doesn't appear in directory or Explorer windows)

These attributes can be changed by right-clicking properties on the file, or by using the following DOS command: attrib <file> RASH

ADFS provides the following:

- L Lock, Lock file against change or deletion
- R Read permission
- W Write permission
- / "Public" access (/R = Public Read, /W=Public Write and /RW=Public Read and Write

These attributes can be changed by menu-clicking on the file in a Filer window, and selecting Access, or by using the following star command:

```
*access <file> [<owner
attributes>/<Public (network)
attributes>]
```

For example:

```
*access FRED WR/WR
```

These L, R and W attributes appear on a file listing in ADFS, such as by doing changing a Filer display to Full info, and additionally the attribute L can be seen

File Types

Windows uses a three character 'extension' to specify the filetype on an eight character filename, upper case only. This appears on a RISC OS system prefixed with a slash, rather than the Windows 'dot' like this: NOTES.TXT is the Windows name, NOTES/TXT would be the RISC OS name.

Windows uses this three-letter extension to identify the file type and there are over 46,000 file types available. In modern Windows systems long file names with lower case are permitted and the file extension is hidden from the user. The three letter extension is also mapped on to a real filetype description, plus each application can inform the operating system what filetypes it will accept.

RISC OS uses an internal file type identifier, it is composed of a three-digit hexadecimal number which gives a maximum of 4096 filetypes, which is a bit limiting, each filetype is mapped to a filetype name which is more descriptive and can be up to eight characters long. Only one application can claim any filetype at any one time.

The filetype of a file can be set through use of the SetType command (to add an 'info' picture) or via Menu clicking on the file, and choosing "Set Type" where either the hexadecimal number or the descriptive name can be specified.

For comparison purposes, Mac OS permits something over 16 million filetypes with four characters. Both Mac OS and Windows specify a file "creator" as well so two applications might create the same type of file, but each would load into the original application if double-clicked. ADFS is quite backward in this respect.

Icons

Windows uses proprietary format icon files with a windows file type of ICO. Some icons are 'embedded' in an EXE file. Windows doesn't come with a standard icon editor, but shareware Windows icon editors are available.

RISC OS uses its standard "Sprite" files (files created in !Paint) which are determined to be a specific size for use as icons. RISC OS Icons can be easily tweaked or created through !Paint using Mask palettes (for masks, read 'transparent colour'). RISC OS' applications contain their icons in Paint format files called Sprites (low resolution modes), Sprites22 and Sprites23 (High resolution modes).

Converting images

!ChangeFSI can convert a vast number of Windows format pictures (including paintbrush (BMP) to sprites). It does also contain a minor bug whereby a grey line appears on the right hand side of the converted sprite (when converting from a BMP). This can be eradicated by loading into !Paint and editing out.

ChangeFSI cannot convert icon (ICO) files, but these could be imported by taking a screen-shot in Windows and converting the resulting BMP file on the Acorn. Alternatively, Paul Vigay's Web site (www.vigay.com) contains a link to a program called Winicon, which apparently can convert Windows icons to RISC OS Sprites, though I haven't tried it.

Applications

Windows applications are invariably built into an EXE (or executable) file that can be run from within Windows. Windows EXEs are typically generated by a development programming language, like Visual Basic, Visual C++ or Visual FoxPro, though some older programs may have been generated by a DOS programming language and will appear as colourful blocks screens.

RISC OS Applications are invariably prefixed with an exclamation mark (pronounced 'pling', from BBC Micro days). These applications are really directories in which program files are stored (can be opened by Shift+double-clicking). They normally contain, at the very least, a !Boot file (for set-up prior to running the application) and a !Run file (to run the application). These file types are described below.

- !Boot is run by the Filer when it first displays the application directory. The !Boot often sets up system variables needed for the application. This is usually an Obey type file.
- The !Run file which is executed when the user double-clicks the Application icon; again usually another Obey file.
- Also included normally are two or maybe three !Sprites file which contain collections of the icons to be used by the application. RISC OS ties the relevant 'sprite' to the application by virtue of it having the same name as the application directory.

Any filetypes that are to have relevant icons attached to them are called file_xxx (where xxx is the hexadecimal file type). These are also included in the Sprites files.

The icon files are linked to the application in the application directory's !Boot file, by issuing the IconSprites command. These are added to RISC OS's 'Sprite pool' from which any sprite can be replaced on the fly.

The !RunImage contains the executable code for the application, it could be a Basic program, written in C or any othe executable language. Equivalent to a Windows EXE or source code. This name is purely traditional.

The file of window definitions used within the application is usually called Templates. This file describes what the windows that are displayed with the application will look like. To view these files you'll need a program like Dick Altsein's !TemplEd which is enclosed in the Utils folder of the Dr Wimp Web site (www.argonet.co.uk/users/rayfavre).

Messages, text messages that can be displayed by the program (equivalent to Visual Basic's RES files). This allows the facility to merely replace this file with a foreign-language version to make a program multi-lingual, a lot of very useful applications have originated in Europe, where there's still strong RISC OS support.

!Help is a user help file. Will appear when user Menu-clicks the Help option on the Filer. It can be of any type, it might lead to a complete instruction manual in HTML, or run StrongHelp, or maybe just load up a text file.

Choices are user-settable choices (often) changed by the program. Program choices would normally stored in the system choices directory, but the default settings are held in the application directory.

Printing

Both Windows and RISC OS have printer drivers, which work across all applications. Printer setup files are dragged and dropped into !Printers when running, and the options saved.

Files can be printed by using the Print facility in the appropriate software (often triggered by pressing the Print key, which is mostly ignored by Windows) or dragged and dropped on the printer icon on the task bar.

As standard, RISC OS does not have an equivalent of Windows' printer "spooler" which allows you to get on with your work while the computer prints. However, there are freeware ones, and commercial ones available. I use the commercial FastSpool+ from Warm Silence Software, and have no complaints!

More next time.

Andy Burgess

Common file types

Common file types on Windows with RISC OS equivalents are (RISC OS equivalent refers to equivalent functions of software):

Windows	Description	RISC OS
.BAT	DOS-style Batch program	Obey
.BMP	Microsoft Paint picture	Sprite (Paint file)
.CSV	Comma Separated Values	CSV file type
.DOC	Microsoft Word document	DDF file type (Ovation Pro or Impression DTP document)
.GIF	Graphics Interchange Format	GIF (compatible with PC)
.EXE	Executable program	Any program
.HTM	Web page	HTML (compatible with PC)
.ICO	Icon	Sprite (Paint file)
.JPG	Internet Photograph	JPEG (compatible with PC)
.TXT	A text only file	TextFile (PC has CR/LF)
.XLS	Microsoft Excel spreadsheet	A file created from an Acorn spreadsheet, like !Eureka



Talking USB

There is a bit of confusion in the market at the moment as to exactly what software is needed to drive a USB peripheral. The common phrase banded about is "driver", however, this is a very loose term and can cover a multitude of sins. This is not helped by the fact that in the RISC OS world we have, quite uniquely, two standards; the blame for which must securely sit on the shoulders of RISC OS Ltd as guardians of the operating system.

However, controversy out of the way, we are left with the choice of waiting until someone else provides software to drive our favourite device or rolling our own. As you know I have always been in the latter camp. So exactly what is involved in getting a USB peripheral to strut its stuff on our machine? It all depends what you want to do.

A true driver is a piece of software that takes a device, interacts with it and then seamlessly integrates it with the rest of the system. For example, to take a complex case, a printer driver will make a USB printer work just like any other printer on the system with the application software not knowing or caring what hardware the printer is.

The same goes for keyboard or mouse drivers, plug them in and your computer should just use them without any fuss. Same with a mass storage device, you want to drag and drop files to it just like any other filling system device, it becomes part of the computer. However, that only applies to a generic subset of devices, those that are part and parcel of the operation of a computer.

Next up are those devices that, while not being fundamental to the operation of the machine, are quite universal. I am thinking here about things like drawing tablets or flash readers where you didn't have one before but need to integrate the new device into the existing structure.

Last in line is the special purpose peripheral, one that does one specialist job, be it an A/D interface, scanner or in my case a Lego tower. This requires a different level of "driver" because a device like this is no use to any application other than one that "knows" about it. The type of "driver" needed here is actually much simpler as all it needs to do is to present a consistent interface to the application.

In fact at this level you might not need a driver at all but simply incorporate into your application some code to talk to the device in question. However, the main advantage of having a driver in these circumstances is that you don't need to incorporate the same lump of code in each application that uses the same peripheral.

Attraction at a price

As you can see the complexity of each type of driver increases as it is required to do more but this complexity is built on the foundations of the simpler case. Therefore a good place to start to see what is needed would be to look at a simple dedicated USB peripheral and see what foundations we can build.

The USB system is attractive for the user because it should take away most of the hassle of connecting new hardware. However, this can only be done at the expense of making the software more complex, to write that is, not to use.

The USB interface card needs its own drivers to do the complex housekeeping needed to operate the USB system. This involves constantly monitoring the state of the bus and dealing with devices being plugged in and removed as well as handling some of the basic handshaking involved in data transfer.

So anything that talks directly to a USB device must also do some talking to the USB's card driver. That's where we are a slightly cursed on our machine and despite what I have read in print this is a major difficulty for a software writer.

This issue should really be one for the operating system to deal with but unfortunately the operating system guardian has abrogated their responsibility in this respect and left it to the market place. The least they could have done is to define what calls should be made into the operating system, there was no need to have implemented them.

So a writer of USB software has to communicate with both the device itself and also the interface into the USB card driver.

Whenever a device is plugged in, the card driver interrogates it to find out what sort of connections it requires and also it assigns the device an address, this process or phase of transactions is known as enumeration. This address doesn't change until the device is physically removed and replaced, then it might get given a different address or the same one as it had before.

The end point

As an application or a device driver communicates with a device solely by its address and end point (more later), it must be informed of any change in the status of devices on the bus. Fortunately for our early experiments we can eliminate the need for such sophistication as finding a device's address by only plugging one thing into the computer. In this way we always know it is at address 2. Address 1 by the way, is reserved for the first device which is the USB card itself.

Similarly each device has one or more "endpoints", that is a point where the data sent to it ends up. By default all devices have endpoint 0 as their communication or control endpoint. That is all messages that change the setting, configuration or mode of a device are all directed towards this endpoint. A device will probably have other endpoints, typically those to which data is directed or those from which data flows. Endpoints other than zero are handled mainly by the USB controller's driver.

So what are these standard messages and how can we use them? Well they are simply numbers, or should I say "bit fields" sent to endpoint 0. Each one means something different and the USB standard defines what they mean.

They are broken down into three groups, ones that all devices should understand and respond to, ones that only apply to a device belonging to a certain class, and those that are specific to that one interface. Most USB devices tend to avoid that last group as there are a wide variety of defined classes that cater for most needs, however when necessary these "private" messages are allowed.

It is quite feasible that a USB device manufacturer can prevent their device working with any, but their own software, by simply not publishing these private messages. Fortunately this is not a common problem because most manufacturers want their device to be used as widely as possible so unique messages tend to be published.

The universal messages are not too riveting but do contain enough information for a driver to identify a device and work out how it is going to communicate with it. Next month we will look at what these messages are, as well as how to send them using both kinds of USB card we will also look at what the returned values mean.

Mike Cook
Rambles@acornuser.com

TURN TO PAGES 48 OR 57 FOR DETAILS

• Wanted: All Acorn A3000s, A3010s, A3020s, A4000s, A5000s, A4s, Risc PC 600 & 700s, StrongARM Risc PC's, Kinetic Risc PCs. Anything considered. Can travel. 07930 507815 or 07775 776217.

• Acorn A5000 including monitor etc plus additional software including Advance suite. Any sensible offer considered. Contact Robert on 0191 5191231 or at robertvardill@beeb.net

• Wanted: Irlam Instruments Videodesk editing system. Any other video editing card suitable for use with a Risc PC also considered. Please contact chris@acdale.demon.co.uk

• Eagle M2 multimedia card; replay video production, HQ video stills, digital stereo sound sampler, full MIDI IN/OUT/THRU facilities, RISCPC compatible. Offers around £160. Multimedia software; Midiworks, Prosound, Cineworks (includes AppleFS) and Genesis Professional £35 each plus postage or £120 for all three. Eagle M2 plus all four packages £250 plus postage. Enquires or offers 0151 547 3993 or email aokai@tiscali.co.uk

• A two foot stack of Acorn User magazines for sale, complete with cover discs, from Sept 1994 to end 2001. Also other Acorn magazines and discs. Best offer secures this 12kg pile. Tel. Coventry, 02476 319519

• For Sale,586 PC CARD for Risc PC, by Aleph1,includes PC Pro 3,also Windows 95 or 98, cost over £300 pounds, will accept £90 or near offer, Radcliffe,Manchester,please phone 0161 280 3375 or email, j.jackh@ntlworld.com

• 30 A5000s with hard drives, classnet network cards and keyboards. If anyone is interested, give me a ring on: 07909 588867.

• Acorn BBC B issue 7 and Cambridge Micro Z88 computers. Complete boxed Achimedes A3000 Learning Curve set. Loads of mags and software. E-mail dannyb@comms-unit.com

• Acorn User, Acorn Computing and Archimedes World mags from between 92-96. With disks but not CD's. Plenty of issues. Also; RO3 PRM's and other programming guides. Any of it is yours if you pay the postage. Tel: 01242 244227.

• RISC PC 700, S/A, RISC OS4, 89b HD, 48x CD, Midi, SCSI, 19" monitor, 36Mb RAM, Loads S/W, Inc: Easiwriter, Ovation Pro, Sibelius 7, Intersuite. richard.benjafield@ntlworld.com 07968985178 £400

• One BBC Master 128 with Z80 Torch pack (CP/M) fitted and twin Z80 disk drives. Second BBC Master 128 with internal 6502 2nd processor fitted with twin Cumana 40/80 drives. Offers please 01702 585358 or e-mail: jar89@btinternet.com

• Acorn Risc PC (upgraded), PLUS strongarm,Windows 2000, scanner, colour printer (Epson), Pro-artisan art, Impression word process. Dorset. £500. E-mail: Sueedwards01@yahoo.co.uk

• For sale: A4000S (A4000 in Semerc case), 2Mb Ram, 400 Meg harddisk, Serial mouse, A5000 keyboard, Userport podule (HCCS Multipodule), RISC OS 3.11. Sensible offers. Can supply VGA monitor for extra 30 pounds. Tel: Bristol (0117) 9425082.

• Anyone want an original unused 486 PC Card (ACA 42) for Risc PC with DOS Software all boxed, manuals etc. Pay the postage or collect from SE London. Tel: 020 7703 5158 or des.dept@btinternet.com

• Wanted: 100MB Zip drive, external parallel port type, also Argo drivers. Will pay £50 and collect within 50 miles of Bracknell. Richard 07956 624412 richarda.green@invensys.com

• For sale: (a) Acorn 1 A7000+ with inkjet printer. (2) Acorn 2 A3020 with scsi MEU inc cd rom drive. Both have monitors are in working order and are ex school systems. Offers please, purchaser must collect Stalybridge, Cheshire, England. E-mail acorns@rastin.com or text 0777 934 1383 I will reply to the best offers

• RISC OS 3 PRM's and other Acorn programming books. Free to pick up or 20 GBP. tel: Cheltenham (01242) 244227 - Chris. Also Acorn user mags issues around ?80-130? free to pick up only.

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Under the spotlight

Welcome to a new irregular series of interviews. This issue we're talking to Dave Lawton a RISC OS/education dealer based in Doncaster.

PT: You call your company, **Etc Systems**, the friendliest dealer in the North Midlands and Yorkshire. But is this something we should take seriously?

Etc: It was the description given by a number of customers as part of their recommendation of the business. I liked it so much that I adopted it.

PT: How long have you been dealers and installers?

Etc: Twenty-three years from the first shop premises, although the history of the business goes back even further than that. Even a potted history of the business would take up far too much space, but I am attempting to get something up on the Web site some time soon.

PT: Why have you chosen all three makers of RISC OS machines Castle, Microdigital, RiscStation as your suppliers?

Etc: I always like to be able to offer customers a choice, being able to offer RISC OS systems from more than one manufacturer was one of the few good things to come out of the dismemberment of Acorn Computers Limited.

PT: What makes RISC OS your favoured system?

Etc: Simple answer, it aids my productivity. I spend the extra time not spent fighting the OS or the applications actually doing real work.

PT: How important is your Web site to your business?

Etc: It's probably the most visible bit of Etc., other than the Wakefield Show stand, and so I probably ought to devote more time to it. I'm not the world's best artist/graphic designer so it looks a bit crude at the moment, but it was worse (yes really). We get a lot of contacts through the Web so we do think it's very important.

PT: Where do you see the company in 18 months time?

Etc: That really depends on a number of things, two of which are the release of RiscStation's Laptop and MicroDigital's Omega - this last looks very close, with MD confirming customer orders as I write.

PT: What do you consider to be your typical system? And how frequently do you change it?

Etc: I try to create a system that is a little more than merely basic, I try to add hardware and software that is needed for most typical use. I don't change this as often as I would like, and the prices really ought to be lower, but that's another story.

PT: What is the model of monitor that most people want nowadays?

Etc: Generally most enquiries are for 17ins or larger, with the way that prices have dropped, that's hardly surprising. The difference in price between 15in and 17in monitors is now fairly small. Having said that, not all monitors are equal, and choosing on lowest price alone will usually guarantee that you end up with rubbish. But that seems to be the way things are in this business, when computers come in the door, common sense flies out the window.

PT: Which monitor do you use? Why?

Etc: Either the Vision Master 350 (15in), or Vision Master Pro 410 (17in) both being older versions of current Iiyama models. The picture quality is superb, so much so that using most other monitors is almost painful, and they are reliable, and come with a 3-year extendable warranty which is rarely needed.

PT: Why did you opt for the HP DeskJet 940 Colour Printer over the Canon range for instance?

Etc: General good value for money is the main reason, the HP range of printers - with an odd exception or two - are reliable, the ink cartridges although high in price (I hate the word expensive it's always used to compare the prices of things which aren't equivalent, like saying apples are more expensive than oranges) do give a good number of pages before they run out, and the print quality has always been good, in fact the higher end HPs nearly always seem to beat the competition these days.

PT: What do you think of the future for RISC OS?

Etc: I'm still hopeful, but the bickering and lack of leadership do make me very despondent at times.

PT: If you could change five things with RISC OS what would they be?

Etc: Most of these have been said by others but they bear repeating:

1. The 26-bit dependency must be removed, now not later. There are now a number of CPUs which are 32-bit only and are considerably faster than anything currently in use. One of these is from Samsung, an ARM10 with enhancements from DIGITAL (StrongARM) to produce a 1GHz processor.

Two of the reasons given for not doing this are: no one has asked for this, and there is no software that would run on such a machine.

Both of these have been talked to death, but the first isn't impossible, it just needs people to talk. The second isn't a problem at all, what new machine has had lots of software when it was first launched?

2. The other dependency, the reliance on the Acorn video and I/O subsystems, sometimes described as the lack of hardware abstraction, needs removing also. Microdigital have come up with one solution to this problem, but I can't see Castle and RiscStation wanting to produce machines based on MD's design.

There are other video systems available, not just the ones produced for the Intel bus machines, but adding the effort to remove the dependency on top of the work to drive the chipset makes it unfeasible.

3. Not a change as such, but a ROM release of Select so that a proper diskless network booting client machine can be produced.

I do a lot of systems for schools and install their networks. It is very important to have discless systems, otherwise we'll have to have some crazy 8Mb Flash rom pretending to be a hard disc to load into the system RAM. Then again, perhaps that's a good idea.

4. Add some form of threading, so that programs that need it, like web browsers, can be written without having to reinvent the wheel all the time.

5. Make it prettier. Seriously, though there have been some very good attempts at icon sets, they tend not to get updated and/or don't include all the programs available. Joe Public's perception of how good a GUI is based on what they see, and at the moment RISC OS just doesn't cut the mustard in this area. RISC OS needs a full time graphic designer, someone to whom programmers can delegate the responsibility for icons/sprites, so that all of them are produced to the same high standard.

Last, but not least, I want a 1GHz ARM10 machine with triple display output, so I can run three monitors, and Dolby 5.1 for the DVD films... Oh, and I want it NOW.



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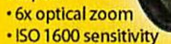


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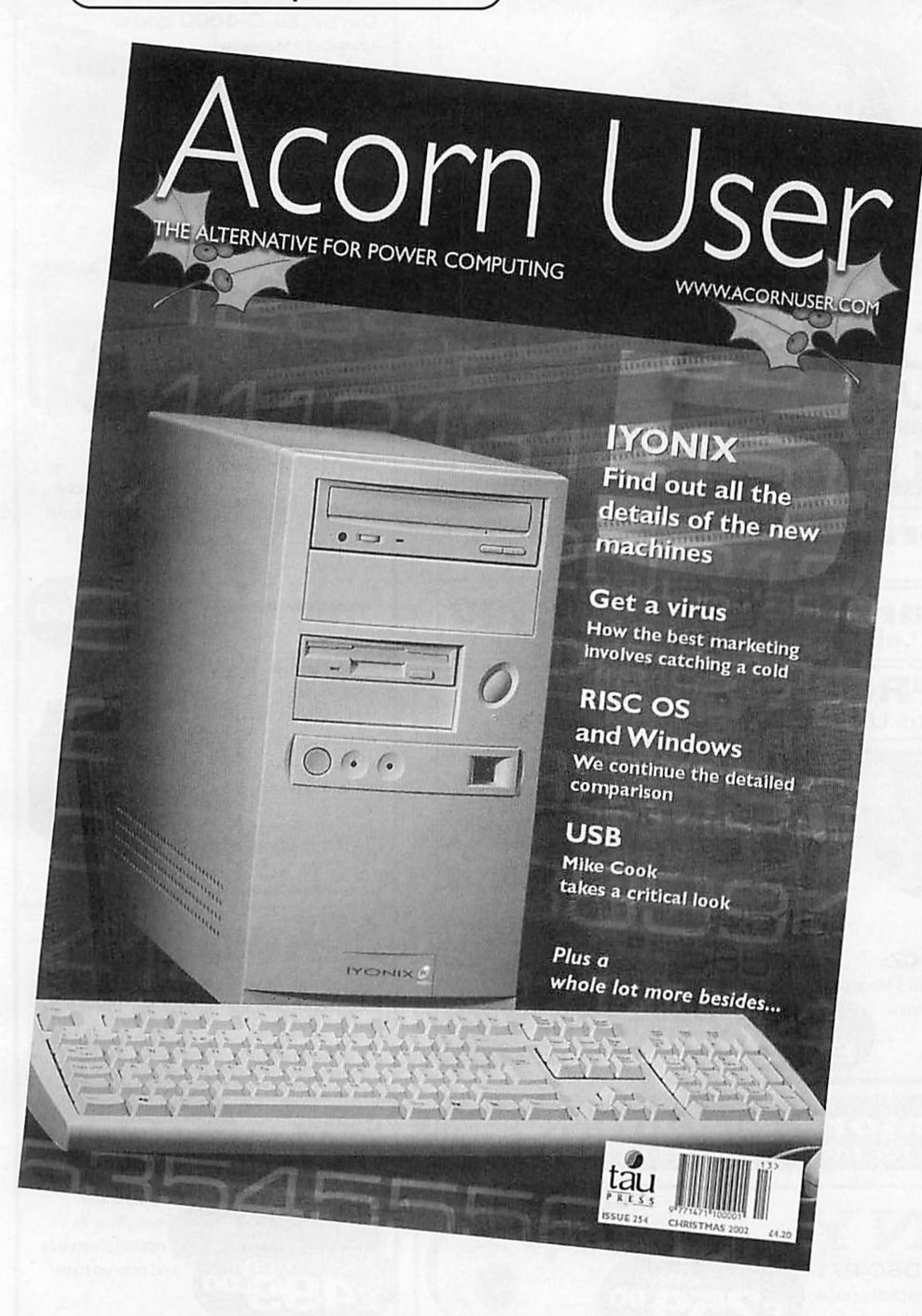
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BETT 2003 - the Preview

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Olympia, London
www.bettshow.com



Hard options

BigKeys is a child-friendly keyboard, it has huge 1 inch keys which are easy to hit, robust and present a simple layout. In fact there are 18 different versions of BigKeys and no special software is needed to access these devices. Get more information on Stand SN61 or via www.bigkeys.co.uk

Tag Developments have a range of digital devices on offer. For instance, the Digital Movie Creator costs £89.95 and is a resilient video camera which enables pupils to collect their own video and sound resources. While the Computer Sound Morpher allows for high-quality sound clips to be recorded remotely from the computer. You can collect sound files, download onto the computer to edit or manipulate for £49.95. Find out more at Stand F50 or at www.taglearning.com

Soft options - Primary

4Learning will be showing off their BookBox. In fact this is a Web site on contemporary children's literature created solely for children. Accessed on www.channel4.com/bookbox open it up to find out about the lives and works of 40 authors from Philip Pullman to Jaqueline Wilson and Jamila Gavin. There are video interviews, digital images and recordings of each of the authors reading from their books.

Created to fill the gap in ICT for children's literature for 9 to 13-year olds. There are reading and writing games and activities plus a creative writing 'toolkit' with hot tips from authors and further reading suggestions in Secret Passages. Supported by books and videos details are available from the Web site.

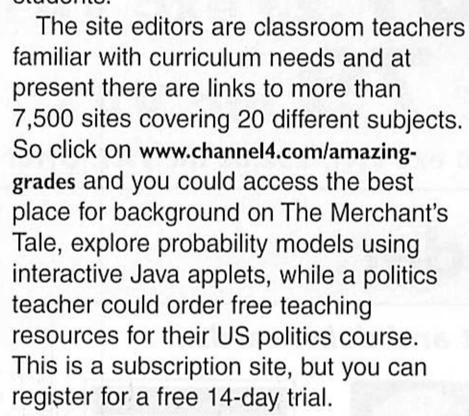
An interesting new series is the Make-Believer range. Allowing children to create 3D models it integrates history, design and technology and ICT. There are three kits available: Kingdoms and Castles, Village Life and The House that You Built. Each kit is supplied complete with software to design the components you need as well as a cardboard baseboard and 100 sheets of specially coated inkjet paper. Priced at £24.95 find out more at www.taglearning.com

Soft options - Secondary

Sixth formers have a new research tool at their disposal. Called Amazing Grades it directs students straight to the best Web sites on their A-Level subjects so cutting down on fruitless searches. Suitable for A/AS Level, Scottish Highers or International Baccalaureate students.



The site editors are classroom teachers familiar with curriculum needs and at present there are links to more than 7,500 sites covering 20 different subjects. So click on www.channel4.com/amazing-grades and you could access the best place for background on The Merchant's Tale, explore probability models using interactive Java applets, while a politics teacher could order free teaching resources for their US politics course. This is a subscription site, but you can register for a free 14-day trial.



Science students now have a new science Web portal, www.channel4.com/sos, created by 4Learning and the Institute of Physics and the Royal Society of Chemistry. The site features three games for 11 to 14-year olds: Energy Quest where there are three islands to explore while solving he energy problems in time for the opening of Club 11-13.

Fashion Victim for those who like to hang out in the shopping village, but while there they must buy the best clothes and learn about the fabrics they are made from. And finally Sound Park where students must unlock the music samples trapped in the audio zones learning about sound and music. Designed to be highly interactive the games are complex and challenging.

Support options

Making its debut at BETT 2003 is the latest version of SAM Learning's online learning courses. Created and updated by a group of over 50 UK examiners, these exam courses now feature comprehensive eLearning usage data, helping LEAs and schools to measure the impact of ICT initiatives.

The service also includes three new options that allow teachers to access real-time progress reports, enabling them to spot areas of strength and weakness at a glance. This allows teachers to give students crucial feedback on work completed at home or school, without the lengthy task of marking. For more information ring 0845 1304160.

If you want to create your own courses, look at courseGenie from Connected Learning. You can write a course within Microsoft Word and with the additional tools and palettes controlling a powerful XML engine, courseGenie automatically generates an online version including navigation and interactive features such as popups, hyperlinks, self-test questions, audio and video. To find out

more visit Stand E168 or www.connectedlearning.co.uk

One of BECTA's two stands this year is called Leading ICT and is aimed at senior management within schools and colleges and will demonstrate how Becta is helping transform leadership and management in education as well as dealing with the procurement and management of the ICT infrastructure. Their second stand, called Practising ICT is aimed at classroom practitioners. Here the focus will be on Becta's research and evidence of effective practice in teaching and learning with advice and guidance on offer to teachers and college lecturers.

If you feel swamped by paperwork, Ascon Education are offering a solution with the Ascon Staff Developer. A complete staff development system it aims to reduce paperwork by providing a flexible framework for making the most of staff learning and includes CPD portfolios, induction, INSET, performance management, development activities, evaluation and training applications. The Performance Management/Review module even incorporates a new approach to managing upper pay scale progression. Visit Stand Y70 or www.asconeducation.com to find out more.

Special Education Coordinators might find the Blue Hills Software stand of interest. This year they'll be launching IEP Pro. Their aim is to enable everyone to write Individual and Group Education Plans quickly and professionally and is preloaded with over 2000 targets plus suggestions for strategies and success criteria. All targets link with the latest DfES documents including P scales 1-8. Find out more at www.bluehills.co.uk

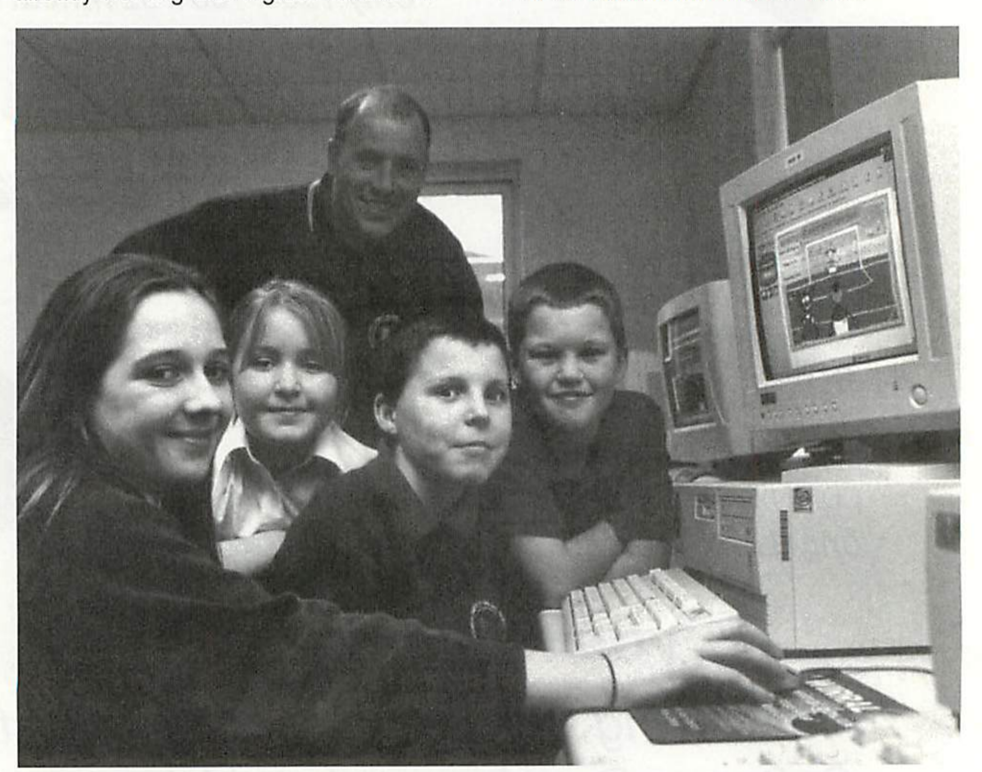
Professor Stephen Heppel and Ultralab will be showing off their research again this year. New projects include a new look at assessment, eVIVA, which reintroduces oracy to the assessment as children answer tough questions about their work and progress by telephone after posting the milestones of their learning on the web. But eVIVA is only one of a number of mobile phone projects under the microscope.

Other projects from Ultralab include one with CBBC to look at the role of user-generated content in television broadcasting and the project has children in the North of England creating their own view of what TV should broadcast and demonstrating their new literacy skills. Also look out for information on a new venture in New Zealand.

The e-Learning Foundation is a national charity which aims to help every school child in the UK have access to a personal portable computer within five years, and they are about to launch a major new report entitled Access Denied. The report examines the challenges facing schools today and suggests solutions.

An executive summary of the report will be available from the e-Learning Foundation, Stand T63 at BETT. Experts from the Foundation will also be on hand to give advice on how to set up a local e-Learning Foundation. There are currently 26 local e-Learning Foundations around the country and many more in the process of being established.

Support IT, the IT training and e-learning solutions provider, has launched a new division, Nisai Education, to cater for the education sector. The company is already working with a great number of



Local Education Authorities and higher education establishments across the UK and Europe to implement e-ffective Learning solutions.

Using a blend of traditional classroom-based instruction and computer-based communication technologies, for the delivery of up-to-date live (synchronous) or self-paced (asynchronous) interactive training, students are able to combine preparatory and self-paced study with classroom teaching. Nisai argue that teachers have more opportunity to enhance the learning process as lessons are not restricted to the time in the classroom as assignments can be set online, even testing can be done online.

Using a user-friendly virtual classroom software, LearnLinc it could help with inclusion whether a child has special needs or if a student is a teenage mother or a traveller. Warwickshire County Council's IRIS On-Line Learning System, already provides curriculum input for sick children in the county, and is now also using LearnLinc to give the out of school children a more realistic classroom experience.

In particular, it enables teachers to "go live" with a group of children thus making it a true, two-way process. It also enables the children to 'talk' to each other and share ideas and projects. You can obtain a demo version on LearnLinc at www.supportit-uk.com

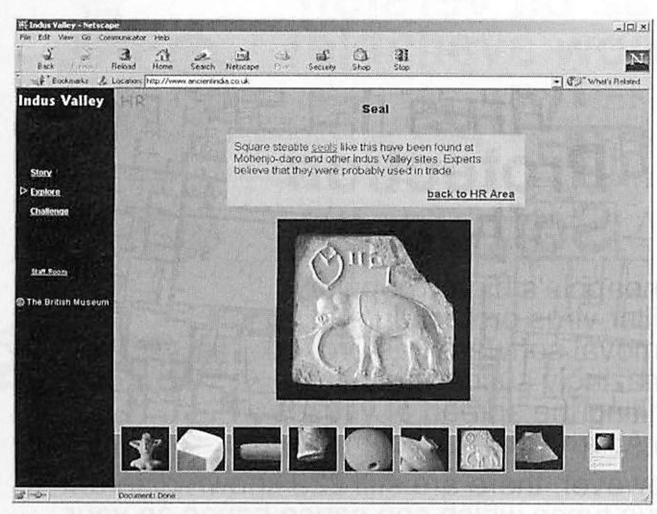
Internet options

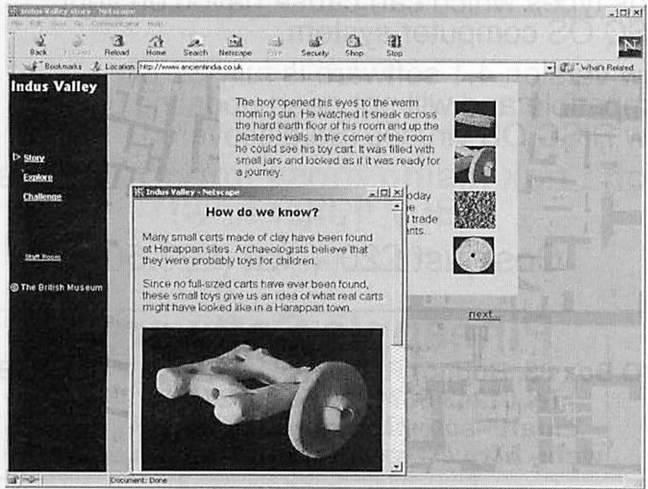
Espresso Education on Stand B82 will be launching a series of new modules for their broadband internet resource service. For instance, produced in association with the London Grid for learning is Faiths. The first three modules on Islam, Hinduism and Sikhism will be available at BETT with others to follow.

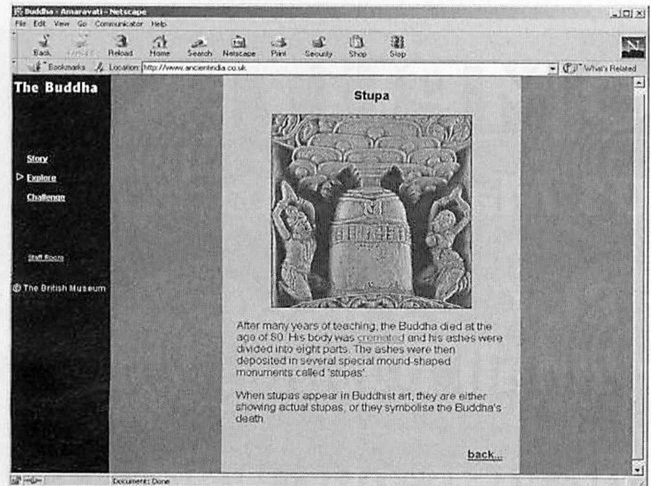
This video-rich resource concentrates on the religious observance in London communities with carefully researched Web sites featuring the basic tenets of each religion, cultural traditions. and especially suited to Key Stage 2.

Staying with Key Stage 2 also look out for new resources for maths, art and design as well as history with the 1920s and 1930s added to their 20th Century Archive.

However, Key Stage 3 teachers should look at the new resources to help deliver the PE theory curriculum at GCSE. This contains multimedia coverage of themes







such as Healthy Living, Human Body as well as Sport and Society. This is available as part of the Espresso service or as a networked CD-ROM. Elsewhere in Key Stage 3 there are French resources for Year 9, as well as a new Citizenship module on smoking.

At the opposite end of the educational spectrum, the Foundation stage is now supported with the release of seven new resources covering the alphabet and numbers for ages three to five. Contact: **www.espresso.co.uk**

Last year BETT saw the launch of Planet Wobble to practice and reinforce early reading and writing skills. This year sees the release of **www.planetwobble.com** which provides opportunities for children to email the six characters who live on Planet Wobble and receive a reply. Crick Software propose to add to the Web site over the coming months to provide a range of supplementary resources.

Atomwide will be launching SkyScan Anti-Spam which has been designed to combat the ever-increasing deluge of junk mail targeted at electronic mail users. SkyScan AS can identify and arrest spam before it reaches its destination. You set your own filtering criteria and so combat the threat of offensive content head on. See the details for yourself on Stand W20 or visit **www.atomwide.com**

Letts Educational will be unveiling an interactive Web site to deliver revision materials for English, Maths and Science for Key Stage 3 students. Titled Online Success, it is based on the format of Letts' best selling 'Success Guides' series, and the Web site features the animation, audio and other interactive devices to keep students engaged as they revise.

Online Success, developed in conjunction with parent company Granada Learning, is also available as a home subscription service that will allow students to access revision material for homework and enable parents to get involved too. Students can store their work for teachers to access at a later date to monitor their progress and strengthen the home-school link.

As to costs, £195 provides one subject per annum to schools, while home users pay £10 for one subject, £18 for two subjects and £25 for three subjects per annum. Find out more by visiting: **www.letts-education.co.uk**

If you're looking for resources on the Indus Valley, you're not usually swamped with options. However, the British Museum will be launching the Ancient India Web site at Stand G60. This is the latest addition to the Ancient Civilizations series of Web sites which already includes Ancient Egypt and Mesopotamia. The newest site explores the culture and history of ancient India and supports the Key Stage 2 curriculum, **www.ancientcivilizations.co.uk**, presenting information through narrative, exploratory and interactive modules and it also contains a Staff Room area where teachers can find background information, discussion topics, printable worksheets and follow-up classroom activities.

Events

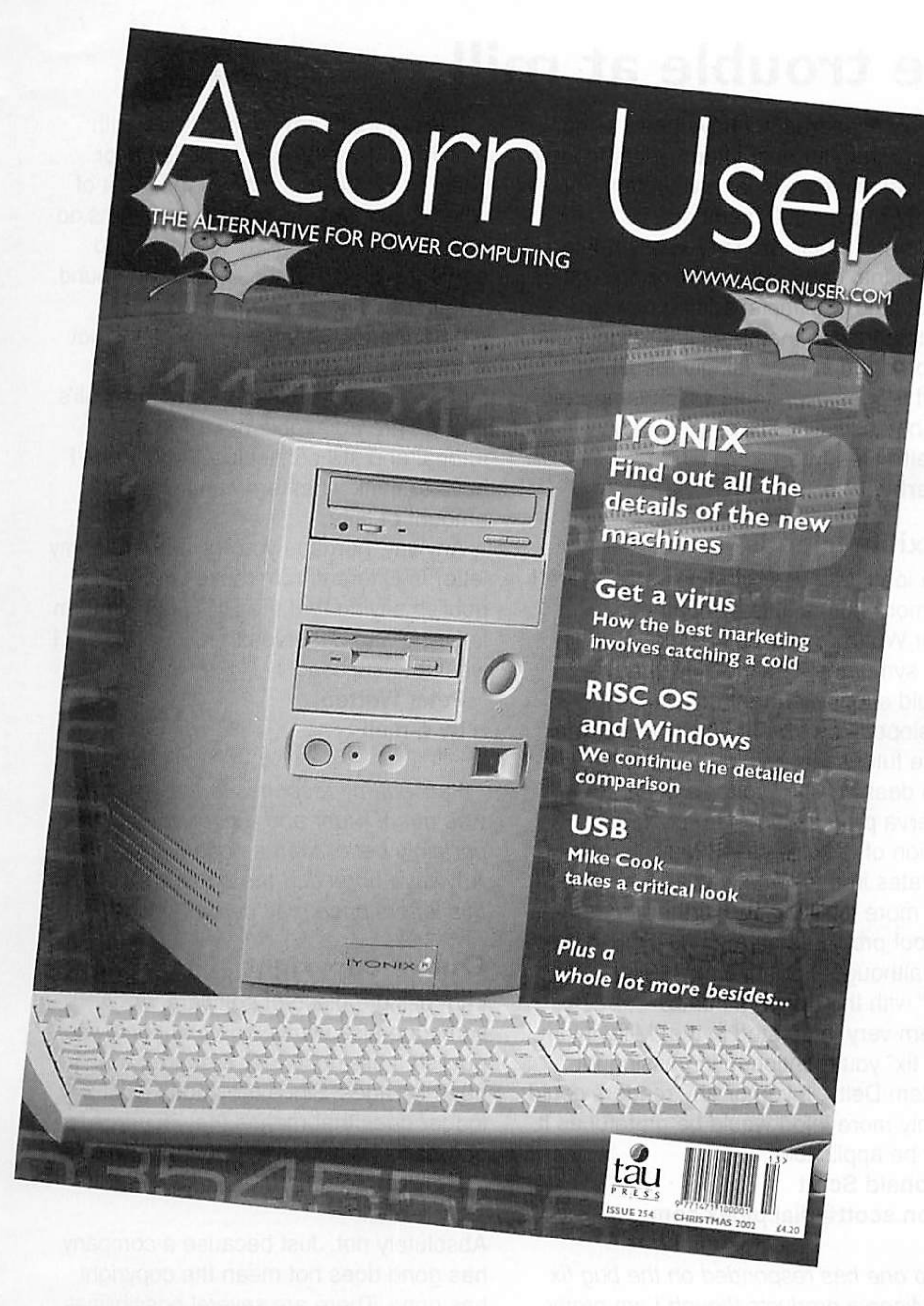
Don't forget to look at the BETT award winners. This year Becta is involved in the judging process with 10 categories to fill. Online learning, hardware, software and innovation are all mentioned in the nomination categories along with Special Needs, Primary, Software and Higher Education. And don't forget that once the finalists have been chosen by teachers and educational experts teachers throughout the UK will vote. All will be revealed on 8th January, in the meantime, vote on **www.bettawards.com**

In addition, the ICT in Practice Awards will be presented on Thursday 9 January during the TES keynote speech.

If life in the fast lane appeals, BETT2003 will again host the International Final of the F1 Cars in Schools Championship. Teams are expected from South Africa, Australia, Asia and America to challenge the best of British. Sponsored by Denford, BAE Systems and Jaguar, the competition allows children to use the latest computer aided design and manufacturing technology equipment to design and virtually race their F1 model cars they have spent the last year designing. It's too late to enter this year's competition but you can enter the 2003/4 challenge by visiting **www.f1inschools.com**

Look out for Becta's seminar programme covering the Communications Aid Project, the Ferl Practitioners Programme, Support for LEA's, Best Value Practice in Buying ICT Goods and Services, ICT and School Leadership, and Effective Teaching and Learning with ICT. You can find full details of the other seminars available at the show at **www.bettshow.co.uk**

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More trouble at mill

I believe the writer of the letter headed 'More trouble at mill' deserves a response. The author of that letter mentions software that is "full of bugs" after three years as a reason for deserting RISC OS and going over to the PC platform. Microsoft Windows has been around a lot longer than three years and still contains more bugs than the insect house at Chester Zoo?

He also mentions bad dealers. Undoubtedly there are bad dealers in the RISC OS market place. I have had a serial switching unit on order for over a year. I used to phone every week to enquire when I would be receiving the unit. I stopped when I realised that I was never going to see it. But that didn't stop me from buying from RISC OS dealers, I will never again place an order with that particular dealer, but I'm not going to punish excellent companies like CTA Direct and R-Comp because of one bad dealer.

Still on the subject of bad dealers, there are plenty of bad PC dealers out there. Similarly, there are bad car dealers, bad furniture dealers, and bad fruit and vegetable dealers. Do you stop eating or do you stick to the good dealers?

I stay with RISC OS for the same reasons as he does, but also because of the excellent service I receive from companies such as those I have mentioned above. When I encounter a bad dealer, I shrug it off and make sure I avoid that dealer in future.

I hope the recent announcement of the Castle Iyonix PC with RISC OS 5 might persuade him to stay with our platform. I'm eager to place my order as soon as Castle will take it.

Mark Syder
Merseyside

Clubs in a pipedream

In response to the question about a database for club membership, may I suggest Pipedream. I have been using this program for over fifteen years to keep membership details for a voluntary society of over 500 members.

Address labels are very easily printed; sorting into categories, for example paid or not paid, is simple; adding new or deleting lapsed members is a doddle and the program is exceedingly robust. In short it does everything which is needed and has never crashed.

Keith Reedman
Derbyshire

Flexifile friends

As a long time user of Minerva software I am more than a little sympathetic to Peter Wotton's viewpoint although I am also sympathetic to the view that we should support current software developers if we want any new software in the future!

To deal with Mr Wotton's query, Minerva produced a more powerful version of Flexifile called Multistore. It operates in the same way as Flexifile but with more facilities and further it operates without problems on my RISC OS 4 Risc PC, although it still has the "Millennium Bug" with the displayed date.

I am very interested in the "Millennium Bug fix" you mentioned in passing for System Delta, if you or any readers could supply more info I would be grateful as it may be applicable.

Donald Scott
don.scott@dial.pipex.com

No one has responded on the bug fix for Minerva products though I am pretty sure it did exist. So that will have to wait.

Not that comfortable

I am sorry if you are peeved but at least you have had the opportunity at having a little fun at my expense and I commend your restraint in not using the phrase "old fuddy duddy." You are probably right as I am 73.

It is not that I am "comfortable" with Flexifile, after all, I had not used it for years, it is only that it gives me most of what I want which the other programs do not. I take the view that software is to serve the user, not the other way around.

I did not say I do not want a programmable database, I said I do not want a programmable database language. I am sure that Steve Turnbull's articles are admirable but a ten month tutorial and still continuing? At my age I have to think whether I can invest that amount of time.

Anyway, perhaps you will agree that my letter is different from those you usually publish saying that the RISC OS platform is failing and deserves to fail. Personally I want it to succeed.

Peter Wotton
by e-mail

I accept my response in the last issue was out of order and a positive letter is certainly better than a negative one. Anyway I hope that the other answers in this letters page may perhaps help.

Out of copyright

I am using a piece of software which someone else wants. The company who publish it are no longer around, haven't been for ages. Since they don't exist any longer does that means the copyright is gone and I can give it to them?

Gordon Schofield
by e-mail

Absolutely not. Just because a company has gone does not mean the copyright has gone. There are several possibilities, if the company was bought out then the buyer would have the copyright. Or it may have reverted to the original author. You cannot assume copyright has somehow evaporated, it's not that volatile.



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